SAMSUNG

SERVICE MANUAL

DVD-R130 / R131

SAMSUNG ELECTRONICS

DVD- RECORDER

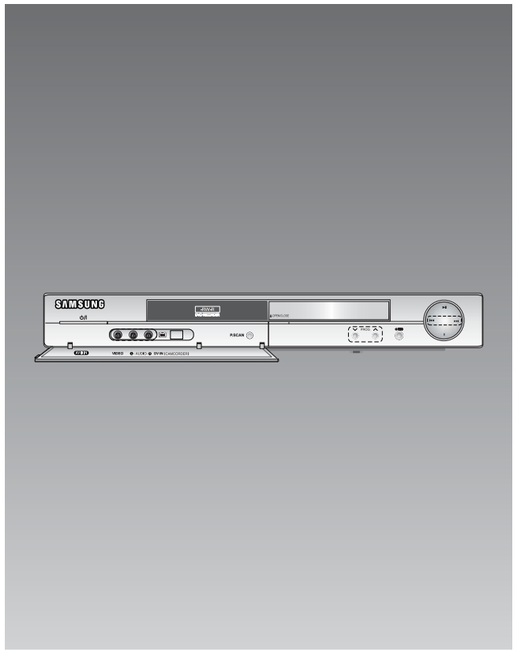
Chassis : ANDES (3rd Generation)

DVD-R130/ COM, EUR, SED, XEB, XEC, XEE, XEF, XEG, XEH, XEN, XEO, XET, XEU, XEV, AFR, AND, SMR, UMG, XSG, XFA, XSA, RAD, XSH, XSS, XST, XTL, SAM, XSE, XSV, CHN, HAC, TAW, SEO

DVD-R131/ COM, EUR, SED, XEB, XEC, XEE, XEF, XEG, XEH, XEN, XEO, XET, XEU, XEV, AFR, AND, SMR, UMG, XSG, XFA, XSA, RAD, XSH, XSS, XST, XTL, SAM, XSE, XSV, CHN, HAC, TAW, SEO

SERVICE Manual

DVD-RECORDER



Merit & Character regarding Product

1. **Multi format recording**
   DVD-RW/ DVD-R
2. **Multi format playback**
   DVD/ DVD-RAM/ DVD-RW/ DVD-R
   CD/ CD-R/ CD-RW/ MP3/ JPEG/ VCD
3. **Recording mode**
   XP(1Hour)/ SP(2Hour)/ LP(4Hour)/ EP(6~8Hour)
4. **Progressive scan**
5. **DV Input**
6. **49mm Slim Design**
7. **Quick Recording**

This Service Manual is a property of Samsung Electronics Co.,Ltd.
Any unauthorized use of Manual can be punished under applicable international and/or domestic law.

© Samsung Electronics Co., Ltd. **APR. 2006**
Printed in Korea
AK82-01026A

CONTENTS

1. Precautions (1-1 ~ 1-6)
- 1-1 Safety Precaution (1-1)
- 1-2 Servicing Precautions (1-3)
- 1-3 ESD Precautions (1-4)
- 1-4 Handling the optical pick-up (1-5)

2. Product Specification (2-1 ~ 2-4)
- 2-1 Product Specification (2-1)
- 2-2 Chassis Product Specification (2-2)
- 2-3 Option Product Specification (2-3)

3. Software Update (3-1 ~ 3-4)
- 3-1 Drive Firmware Update (3-1)
- 3-2 Flash Update (3-3)

4. Disassembly and Reassembly (4-1 ~ 4-6)
- 4-1 Cabinet and PCB (4-1)
- 4-2 PCB Location (4-6)

5. Trouble Shooting (5-1 ~ 5-12)

6. Exploded View and Parts List (6-1 ~ 6-6)
- 6-1 Cabinet Assembly (DVD-R130) (6-2)
- 6-2 Cabinet Assembly (DVD-R131) (6-4)

7. Electrical Parts List (7-1 ~ 7-14)

8. Block Diagram (8-1 ~ 8-8)
- 8-1 All Block Diagram (8-2)
- 8-2 AIC1(PCM1753) Audio DA Block Diagram (8-3)
- 8-3 System Block Diagram (8-4)
- 8-4 TIC1(TW9906) Video Decoder Block Diagram (8-5)
- 8-5 Internal Block Diagram (8-6)
- 8-6 HA118827F-E Block Diagram (8-7)

CONTENTS

9. Wiring Diagram (9-1 ~ 9-2)

10. PCB Diagrams (10-1 ~ 10-6)

- 10-1 Main PCB (10-2)
- 10-2 Jack PCB (10-4)
- 10-3 Key PCB (10-6)

11. Schematic Diagrams (11-1 ~ 11-20)

- 11-1 S.M.P.S. (Jack PCB) (11-3)
- 11-2 A2 / NICAM (Jack PCB) (11-4)
- 11-3 Connection (Jcak PCB) (11-5)
- 11-4 Front AV (Jack PCB) (11-6)
- 11-5 I/O (Jack PCB) (11-7)
- 11-6 I/O Switching (Jack PCB) (11-8)
- 11-7 LED Driver (Jack PCB) (11-9)
- 11-8 Power (Jack PCB) (11-10)
- 11-9 System Control (Jack PCB) (11-11)
- 11-10 TM (Jack PCB) (11-12)
- 11-11 VPS_PDC (Jack PCB) (11-13)
- 11-12 DVD AV Codec (Main PCB) (11-14)
- 11-13 DVD Audio In/Out (Main PCB) (11-15)
- 11-14 DVD DDR (Main PCB) (11-16)
- 11-15 DVD Main Connector (Main PCB) (11-17)
- 11-16 DVD Video Deocder (Main PCB) (11-18)
- 11-17 IEEE 1394 (Main PCB) (11-19)
- 11-18 Key (Key PCB) (11-20)

CONTENTS

12. Operating Instructions (12-1 ~ 12-10)

13. Circuit Operating Descriptions (13-1 ~ 13-16)

- 13-1 Power (13-1)
- 13-2 AV Codec (13-4)
- 13-3 SERVO (DVP Multi Drive) (13-7)
- 13-4 Video In/Out block (13-9)
- 13-5 Audio (13-12)
- 13-6 Tuner (13-14)
- 13-7 IF (13-15)

14. Reference Information (14-1 ~ 14-12)

- 14-1 Introduction to DVD (14-1)
- 14-2 DVD-Video Fromat (14-3)
- 14-3 About IEEE1394 (14-9)

1. Precautions

1-1 Safety Precautions

1) Before returning an instrument to the customer, always make a safety check of the entire instrument, including, but not limited to, the following items:

(1) Be sure that no built-in protective devices are defective or have been defeated during servicing. (1)Protective shields are provided to protect both the technician and the customer. Correctly replace all missing protective shields, including any removed for servicing convenience.
(2)When reinstalling the chassis and/or other assembly in the cabinet, be sure to put back in place all protective devices, including, but not limited to, nonmetallic control knobs, insulating fish papers, adjustment and compartment covers/shields, and isolation resistor/capacitor networks. Do not operate this instrument or permit it to be operated without all protective devices correctly installed and functioning.

(2) Be sure that there are no cabinet openings through which adults or children might be able to insert their fingers and contact a hazardous voltage. Such openings include, but are not limited to, excessively wide cabinet ventilation slots, and an improperly fitted and/or incorrectly secured cabinet back cover.

(3) Leakage Current Hot Check-With the instrument completely reassembled, plug the AC line cord directly into a 230V(220V ~ 240V) AC outlet. (Do not use an isolation transformer during this test.) Use a leakage current tester or a metering system that complies with American National Standards institute (ANSI) C101.1 Leakage Current for Appliances and Underwriters Laboratories (UL) 1270 (40.7). With the instrument's AC switch first in the ON position and then in the OFF position, measure from a known earth ground (metal water pipe, conduit, etc.) to all exposed metal parts of the instrument (antennas, handle brackets, metal cabinets, screwheads, metallic overlays, control shafts, etc.), especially any exposed metal parts that offer an electrical return path to the chassis.
Any current measured must not exceed 0.5mA. Reverse the instrument power cord plug in the outlet and repeat the test. See Fig. 1-1.
Any measurements not within the limits specified herein indicate a potential shock hazard that must be eliminated before returning the instrument to the customer.

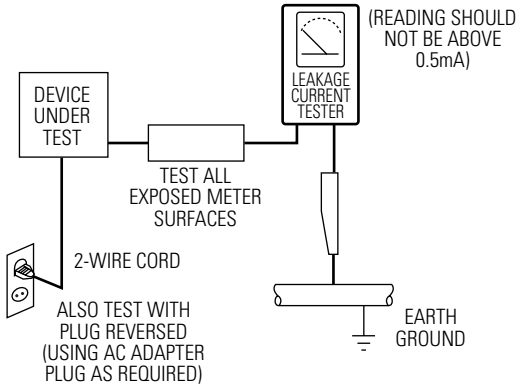

(READING SHOULD NOT BE ABOVE 0.5mA)
LEAKAGE CURRENT TESTER
DEVICE UNDER TEST
TEST ALL EXPOSED METER SURFACES
2-WIRE CORD
ALSO TEST WITH PLUG REVERSED (USING AC ADAPTER PLUG AS REQUIRED)
EARTH GROUND

Fig. 1-1 AC Leakage Test

(4) Insulation Resistance Test Cold Check-(1) Unplug the power supply cord and connect a jumper wire between the two prongs of the plug. (2) Turn on the power switch of the instrument. (3) Measure the resistance with an ohmmeter between the jumpered AC plug and all exposed metallic cabinet parts on the instrument, such as screwheads, antenna, control shafts, handle brackets, etc. When an exposed metallic part has a return path to the chassis, the reading should be between 1 and 5.2 megohm. When there is no return path to the chassis, the reading must be infinite. If the reading is not within the limits specified, there is the possibility of a shock hazard, and the instrument must be repaired and rechecked before it is returned to the customer. See Fig. 1-2.

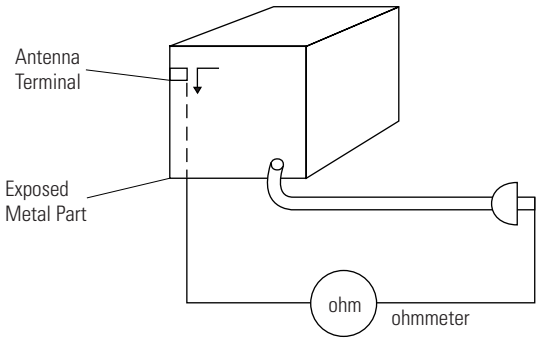


Fig. 1-2 Insulation Resistance Test

2) Read and comply with all caution and safety related notes on or inside the cabinet, or on the chassis.

3) Design Alteration Warning-Do not alter or add to the mechanical or electrical design of this instrument. Design alterations and additions, including but not limited to, circuit modifications and the addition of items such as auxiliary audio output connections, might alter the safety characteristics of this instrument and create a hazard to the user. Any design alterations or additions will make you, the servicer, responsible for personal injury or property damage resulting therefrom.

4) Observe original lead dress. Take extra care to assure correct lead dress in the following areas:
(1) near sharp edges, (2) near thermally hot parts (be sure that leads and components do not touch thermally hot parts), (3) the AC supply, (4) high voltage, and (5) antenna wiring. Always inspect in all areas for pinched, out-of-place, or frayed wiring, Do not change spacing between a component and the printed-circuit board. Check the AC power cord for damage.

5) Components, parts, and/or wiring that appear to have overheated or that are otherwise damaged should be replaced with components, parts and/ or wiring that meet original specifications.
Additionally, determine the cause of overheating and/or damage and, if necessary, take corrective action to remove any potential safety hazard.

6) Product Safety Notice-Some electrical and mechanical parts have special safety-related characteristics which are often not evident from visual inspection, nor can the protection they give necessarily be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified by shading, an (⚡)or a (⚠)on schematics and parts lists. Use of a substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire and/or other hazards. Product safety is under review continuously and new instructions are issued whenever appropriate.

1-2 Servicing Precautions

CAUTION : Before servicing units covered by this service manual and its supplements, read and follow the Safety Precautions section of this manual.

Note : If unforseen circumstances create conflict between the following servicing precautions and any of the safety precautions, always follow the safety precautions. Remember: Safety First.

1-2-1 General Servicing Precautions

(1) a. Always unplug the instrument's AC power cord from the AC power source before (1) re-moving or reinstalling any component, circuit board, module or any other instrument assembly, (2) disconnecting any instrument electrical plug or other electrical connection, (3) connecting a test substitute in parallel with an electrolytic capacitor in the instrument.

b. Do not defeat any plug/socket B+ voltage interlocks with which instruments covered by this service manual might be equipped.

c. Do not apply AC power to this instrument and /or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.

d. Always connect a test instrument's ground lead to the instrument chassis ground before connecting the test instrument positive lead. Always remove the test instrument ground lead last.

Note : Refer to the Safety Precautions section ground lead last.

(2) The service precautions are indicated or printed on the cabinet, chassis or components. When servicing, follow the printed or indicated service precautions and service materials.

(3) The components used in the unit have a specified flame resistance and dielectric strength.
When replacing components, use components which have the same ratings. Components identified by shading, by(⚠) or by (⚠) in the circuit diagram are important for safety or for the characteristics of the unit. Always replace them with the exact replacement components.

(4) An insulation tube or tape is sometimes used and some components are raised above the printed wiring board for safety. The internal wiring is sometimes clamped to prevent contact with heating components. Install such elements as they were.

(5) After servicing, always check that the removed screws, components, and wiring have been installed correctly and that the portion around the serviced part has not been damaged and so on. Further, check the insulation between the blades of the attachment plug and accessible conductive parts.

1-2-2 Insulation Checking Procedure

Disconnect the attachment plug from the AC outlet and turn the power ON. Connect the insulation resistance meter (500V) to the blades of the attachment plug. The insulation resistance between each blade of the attachment plug and accessible conductive parts(see note) should be more than 1 Megohm.

Note : Accessible conductive parts include metal panels, input terminals, earphone jacks, etc.

1-3 ESD Precautions

Electrostatically Sensitive Devices (ESD)

Some semiconductor (solid state) devices can be damaged easily by static electricity.
Such components commonly are called Electrostatically Sensitive Devices(ESD). Examples of typical ESD devices are integrated circuits and some field-effect transistors and semiconductor chip components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

(1) Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed for potential shock reasons prior to applying power to the unit under test.

(2) After removing an electrical assembly equipped with ESD devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.

(3) Use only a grounded-tip soldering iron to solder or unsolder ESD devices.

(4) Use only an anti-static solder removal devices. Some solder removal devices not classified as “anti-static” can generate electrical charges sufficient to damage ESD devices.

(5) Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ESD devices.

(6) Do not remove a replacement ESD device from its protective package until immediately before your are ready to install it.(Most replacement ESD devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive materials).

(7) Immediately before removing the protective materials from the leads of a replacement ESD device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

CAUTION : Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

(8) Minimize bodily motions when handling unpackaged replacement ESD devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ESD device).

1-4 Handling the optical pick-up

The laser diode in the optical pick up may suffer electrostatic breakdown because of potential static electricity from clothing and your body.

The following method is recommended.

(1) Place a conductive sheet on the work bench (The black sheet used for wrapping repair parts.)

(2) Place the set on the conductive sheet so that the chassis is grounded to the sheet.

(3) Place your hands on the conductive sheet(This gives them the same ground as the sheet.)

(4) Remove the optical pick up block

(5) Perform work on top of the conductive sheet. Be careful not to let your clothes or any other static sources to touch the unit.

- Be sure to put on a wrist strap grounded to the sheet.
- Be sure to lay a conductive sheet made of copper etc. Which is grounded to the table.

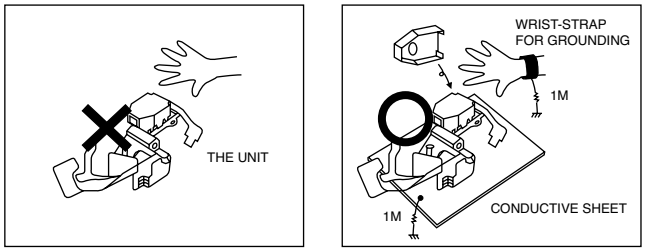


Fig.1-3

(6) Short the short terminal on the PCB, which is inside the Pick-Up ASS'Y, before replacing the Pick-Up. (The short terminal is shorted when the Pick-Up Ass'y is being lifted or moved.)

(7) After replacing the Pick-up, open the short terminal on the PCB.

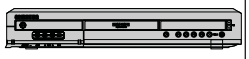
MEMO

2. Product Specification

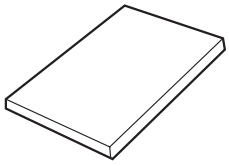
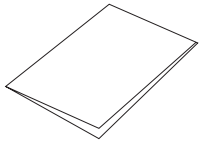
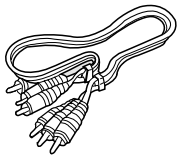
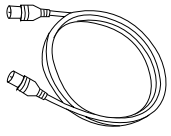
2-1 Product Specification

General	Power requirements		AC 220-240V, 50Hz
	Power consumption		21Watts
	Weight		2.6 kg
	Dimensions		430mm(W) x 240mm(D) x 49mm(H)
	Operating temp		+5°C to +35°C
	Other conditions		Keep level when operating. Less than 75% operating humidity
Input	Video		Composite Video : 1.0 V p-p at 75ohm load, sync negative
	Audio		Max. Audio input level : 2Vrms
	DV Input		IEEE 1394(4p) compatible jack
	Receivable Channels		PAL I
	Scart Jack	AV1 (Scart TV)	Video : Composite, Audio : analogue
		AV2 (Scart Ext)	Video : Composite, RGB Audio : analogue
Output	Audio		Analogue output jacks X 2
			Optical/coaxial digital audio output
	Video		Composite Video : Video output jack X 1
			S-Video output X 1 (Y: 1.0Vp-p, C:0.286Vp-p at 75 ohm load)
			Component output X 1 (Y: 1.0Vp-p ,Pb:0.70Vp-p, Pr:0.70Vp-p at 75ohm load)
	Scart Jack	AV1 (Scart TV)	Video : Composite, RGB Audio : analogue
Recording	Picture compression format		MPEG-II
	Audio compression format		Dolby digital 2ch/256kbps, MPEG-II
	Recording Quality		XP (about 8 Mbps), SP (about 4 Mbps), LP (about 2 Mbps),
			EP (about 1,2 Mbps or about 0,8 Mbps)
	Audio frequency characteristics		20 Hz ~ 20 KHz

2-2 Chassis Product Specification

General	Model Name	DVD-R120	DVD-R130	DVD-R131
				
Info	Function	Standard	Standard	Standard
SYSTEM	COLOR SYSTEM	PAL	PAL	PAL
	BROADCAST SYSTEM	I, B/G, D/K, L/L'	I, B/G, D/K, L/L'	I, B/G, D/K, L/L'
	AUTO CLOCK	O	O	O
RECORER FUNCTION	DVD-RAM	O	-	-
	DVD-R	O	O	O
	DVD-RW	O	O	O
	VIDEO	MPEG-2	MPEG-2	MPEG-2
	AUDIO	2ch	2ch	2ch
	HDD	-	-	-
	Flexible Recording	O	O	O
	OTR	O	O	O
	Time Slip	O	-	-
	VCR Plus+/Show View/G-Code	O	-	-
	Quick Dubbing	-	-	-
	EPG(Gemstar)	-	-	-
SUB FUNCTION	IR Blaster	-	-	-
	Play List	O	O	O
	Auto Chaptering	O	-	-
	JPEG Browser with BG music	O	-	-
	DV Input	O	O	O
	10in2 Memory Slot	-	-	-
PLAYBACK FUNCTION	DVD-RAM/-R/-RW	O/O/(O)	O/O/(O)	O/O/(O)
	DVD-Video/VCD/CD-DA	O/-/O	O/-/O	O/-/O
	CD-R/RW	O/O	O/O	O/O
	Music CD	O	O	O
	MPEG4/Divx	O	O	O
	Multi Memory Card	-	-	-
	Progressive Scan Output	O	O	O
	Upscaling(720P/1080i)	-	-	-
IN/OUT	Video / Audio 21pin (on the rear)	Yes (AV1)	Yes (AV1)	Yes (AV1)
	Sat. 21 pin (om the rear) with RGB	Yes (AV2)	Yes (AV2)	Yes (AV2)
	Video/Audio in RCA Jack (on the front)	Yes (AV3)	Yes (AV3)	Yes (AV3)
	Video/Audio in RCA Jack (on the rear)	-	-	-
	Video/Audio out RCA Jack (on the rear)	Yes x 1	Yes x 1	Yes x 1
	Additional Audio output (on the rear)	Yes x 1	Yes x 1	Yes x 1
	Aerial In / Ant.- out (on the rear)	Yes	Yes	Yes
	RGB Output 21 pin	Yes (SCART-1) X 1	Yes (SCART-1) X 1	
	Coaxial Digital Audio output	Yes x 1	Yes x 1	Yes x 1
	Optical Digital Audio output	Yes x 1	Yes x 1	Yes x 1
	S-Video output (on the rear)	Yes x 1	Yes x 1	Yes x 1
	S-Video input (on the front)	-	-	-
	S-Video input (on the rear)	-	-	-
	DV input (on the front)	Yes	Yes	Yes
	Component VIdeo Output	Yes	Yes	Yes

2-3 Option Product Specification

Description Fig	Description	Parts No	Remark
	Remote Control	AK59-00055B	Model Standard of DVD-R130/XEU
	Batteries for Remote Control	4301-001035	Model Standard of DVD-R130/XEU S.N.A
	User's Manual	–	Model Standard of DVD-R130/XEU
	Quick Guide	–	Model Standard of DVD-R130/XEU S.N.A
	Video/Audio Cable	AC39-42001R	Model Standard of DVD-R130/XEU
	RF Cable	AC39-00017A	Model Standard of DVD-R130/XEU

MEMO

3. Software Update

3-1 Drive Firmware Update

3-1-1 Introduction

When you can not record and play on specific recording media (especially on newly available DVD-RAM, DVD-RW or DVD-R).

3-1-2 How to make an update disc

• Write the downloaded file onto a blank CD-R or CD-RW disc, using the following settings :

1) Download the software update file from the samsung internet site. (www.samsung.com)

2) Write the file to disc using the CD-RW of your computer.

NOTE

- Recommended Application Program
  - Nero Burning / Easy CD Creator ..etc
- Option
  - Extension name : "*.SMD"
  - Multisession : No Multisession
  - File name lenght : Max. of 11 = 8 + 3
  - Format : Mode 1
  - Character set : ISO 9660 or Joliet Format
  - CD Close & Dise at once

WARNING

It is very important : please read the below notice below before upditang your unit.

The followong events may interrupt the update process and MAY RESULT IN PERMANENT DAMAGE TO THE UNIT WHILE UPDATING

① Unplugging the power cord.

② Power Outage.

③ Dirt or Scratches on the disc.

④ Opening a disc tray during processing.

1) Press **OPEN/CLOSE** to open the disc tray.
2) Insert the update CD-R disc with the software update, label facing up.
3) Press **OPEN/CLOSE** to close the disc tray.

* It takes about 1~2 minites before the mesage below appears.

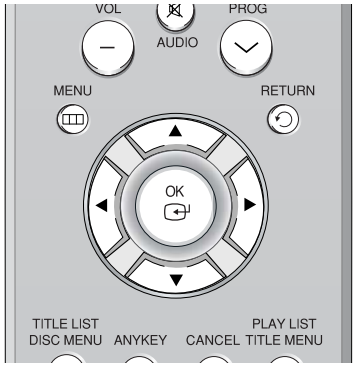


Fig. 3-1 Remote Control

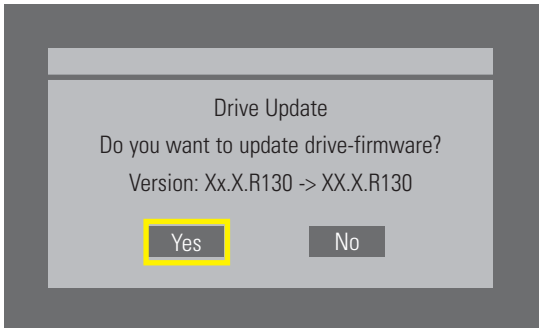


Fig. 3-2

Atfer checking old and new version, select "Yes" or "No" with " ◀ " or " ▶ " on the remote control.
* The Version is indicated by "XX.X modelname"

* If you don't see the message above, try another disc. Generally, this is caused by disc quality and by disc creating problem.

4) Press the **OK** button on the remote control (Fig. 3-1).

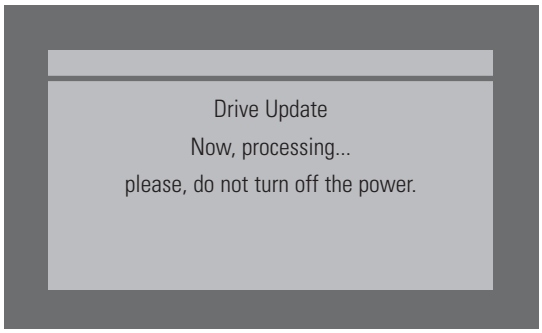


Fig.3-3

You will see "LOAD" on FLT Display.

5) It takes about 1~2 minutes to complete the update.
The message below will be displayed in the screen after update is completed and the tray will open automatically.

Fig. 3-4

Fig. 3-5

6) After removing the update disc, turn off the unit with power button.
And there after turn on the unit with power button and then the will be closed.
The drive firmware is now completed.

3-2 Flash Update

3-2-1 Introduction

When you encounter the problem which is not related in drive firmware necessity.

3-2-2 How to make an update disc

Write the downloaded file onto a blank CD-R or CD-RW disc, using the following settings :

1) Download the software update file from the samsung internet site. (www.samsung.com)

2) Write the file to disc using the CD-RW of your computer.

NOTE

- Recommended Application Program
  - Nero Burning / Easy CD Creator ..etc
- Option
  - Multisession : No Multisession
  - CD close & disc at once
  - ISO 9660 or joliet format
  - Extension name : "*.RUF"
- In order to increase dise playability, add a dummy file (over 100MB) together with the latest program.
  (The dummy file can be used any kind of file except MP3 file etc which can be played in the unit and we recommend to use a file whin extension name as "*.dmy", which can be changed from original one.)

WARNING

It is very important : please read the below notice below before updating your unit.

The followong events may interrupt the update process and MAY RESULT IN PERMANENT DAMAGE TO THE UNIT WHILE UPDATING

① Unplugging the power cord.

② Power Outage.

③ Dirt or Scratches on the disc.

④ Opening a disc tray during processing.

1) Press **OPEN/CLOSE** to open the disc tray.
2) Insert the update CD-R disc with the software update, label facing up.
3) Press **OPEN/CLOSE** to close the disc tray.

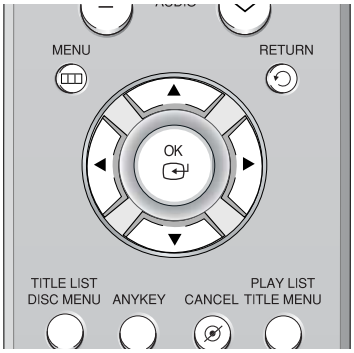


Fig. 3-6 Remote Control

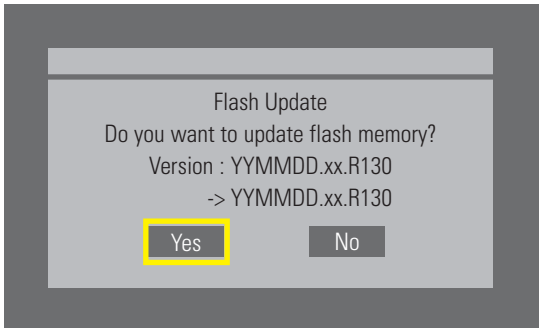


Fig. 3-7

Atfer checking old and new version, select "Yes" or "No" with " ◀ " or " ▶ " on the remote control.
* The Version is indicated by "YYMMDD.xx modelname"

* If you don't see the message above, try another disc.
Generally, this is caused by disc quality and by disc creating problem.

4) Press the **OK** button on the remote control (Fig. 3-6).

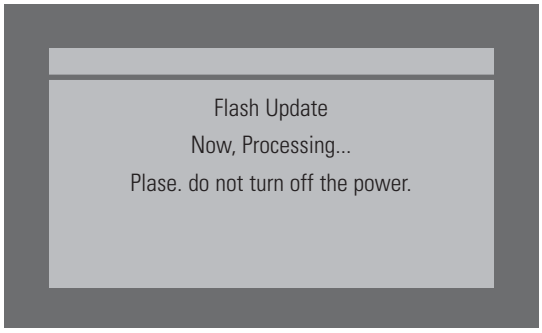


Fig. 3-8

5) It takes about 5 minutes to complete the update.
The message below will be displayed in the screen after update is completed and the tray will open automatically.

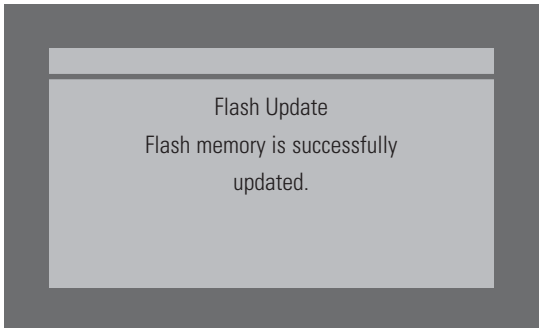


Fig. 3-9

* If the message to the left isn't displayed after 10minutes and the unit is no longer functioning properly, contact a samsung authorized service center.

6) After removing the update disc, turn off the unit with power button.
And there after turn on the unit with power button and then the will be closed.
The Flash update is now completed.

4. Disassembly and Reassembly

4-1 Cabinet and PCB

Note : Reassembly in reverse order.

4-1-1 Top Cabinet Removal

1) Remove 5 Screws ❶, ❷, ❸.
2) Lift up the Top Cabinet in direction of arrow.

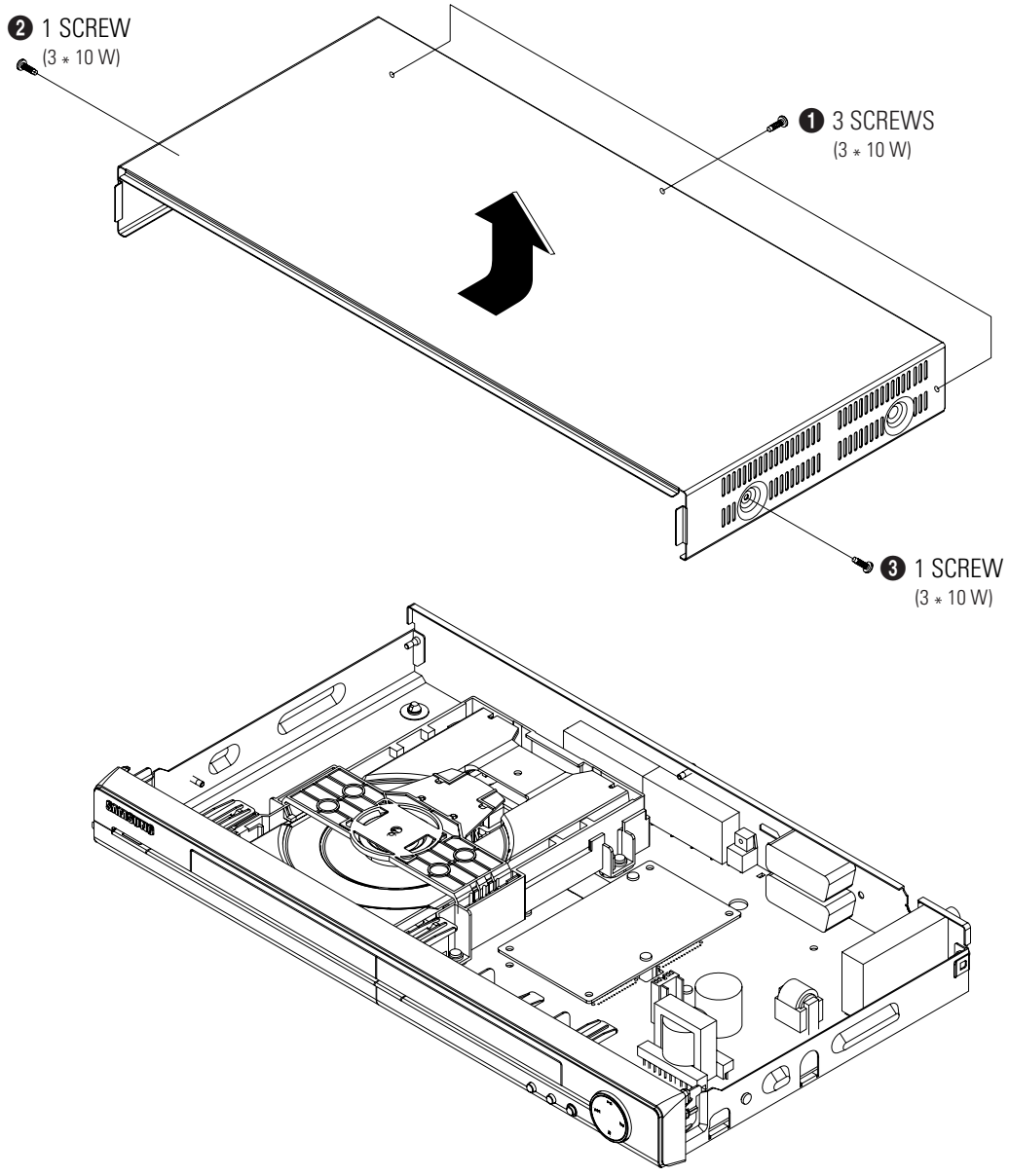


Fig. 4-1 Top Cabinet Removal

4-1-2 Ass'y Front-Cabinet Removal

1) Release 6 Hooks ❶, ❷, ❸, ❹ and Ass'y Front-Cabinet ❺.

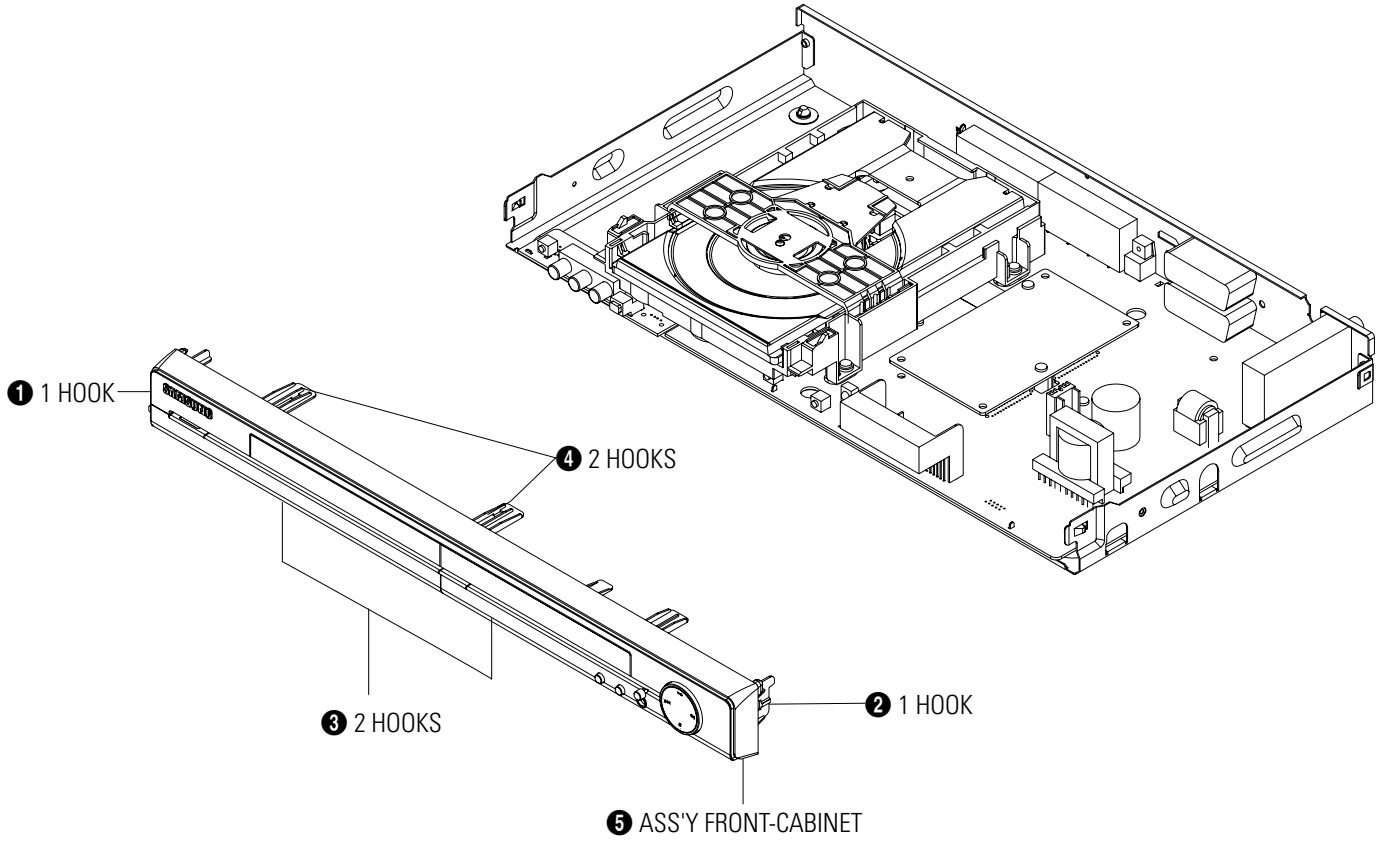


Fig. 4-2 Ass'y Front-Cabinet Removal

4-1-3 Ass'y Deck Removal

1) Remove 4 Screws ❶, ❷ from the Ass'y Deck ❸ and lift it up.

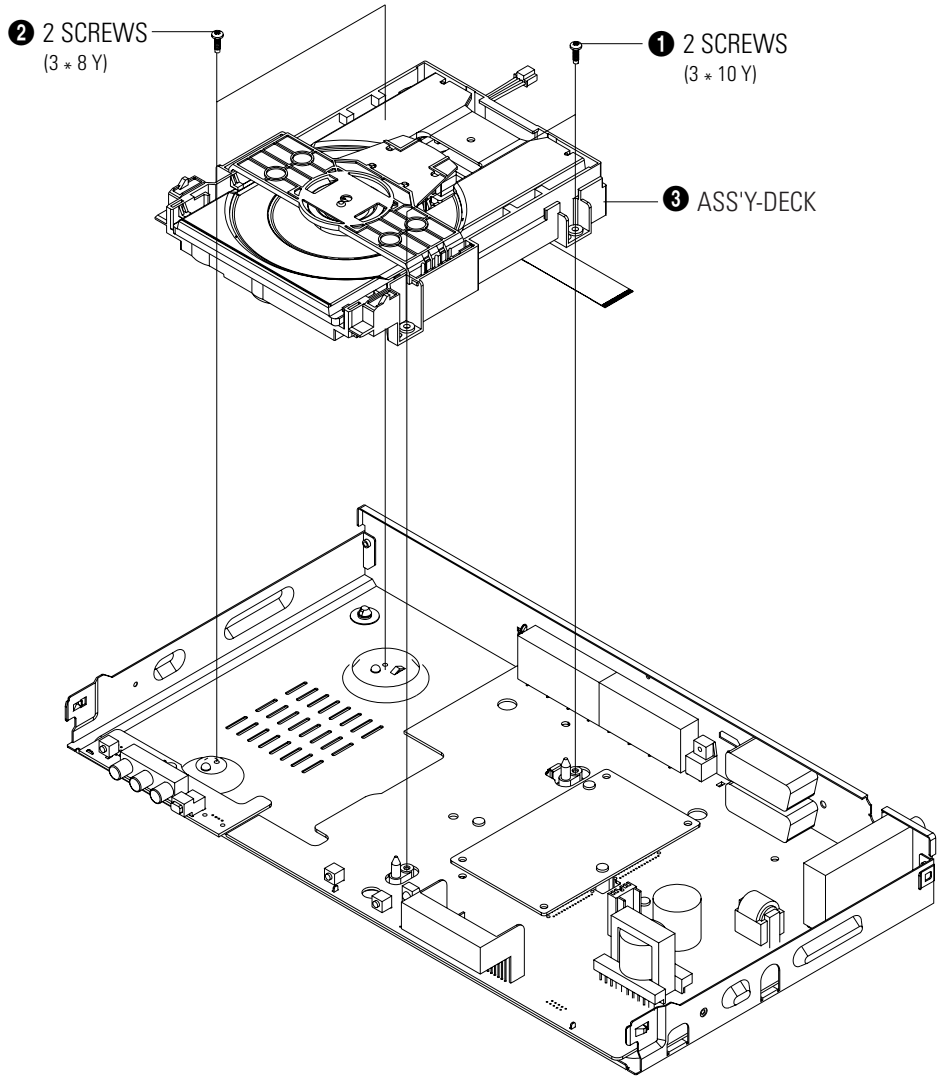


Fig. 4-3 Ass'y Deck Removal

4-1-4 Main PCB Removal

1) Remove 2 Screws ❶, from the Main PCB ❷ and lift it up.

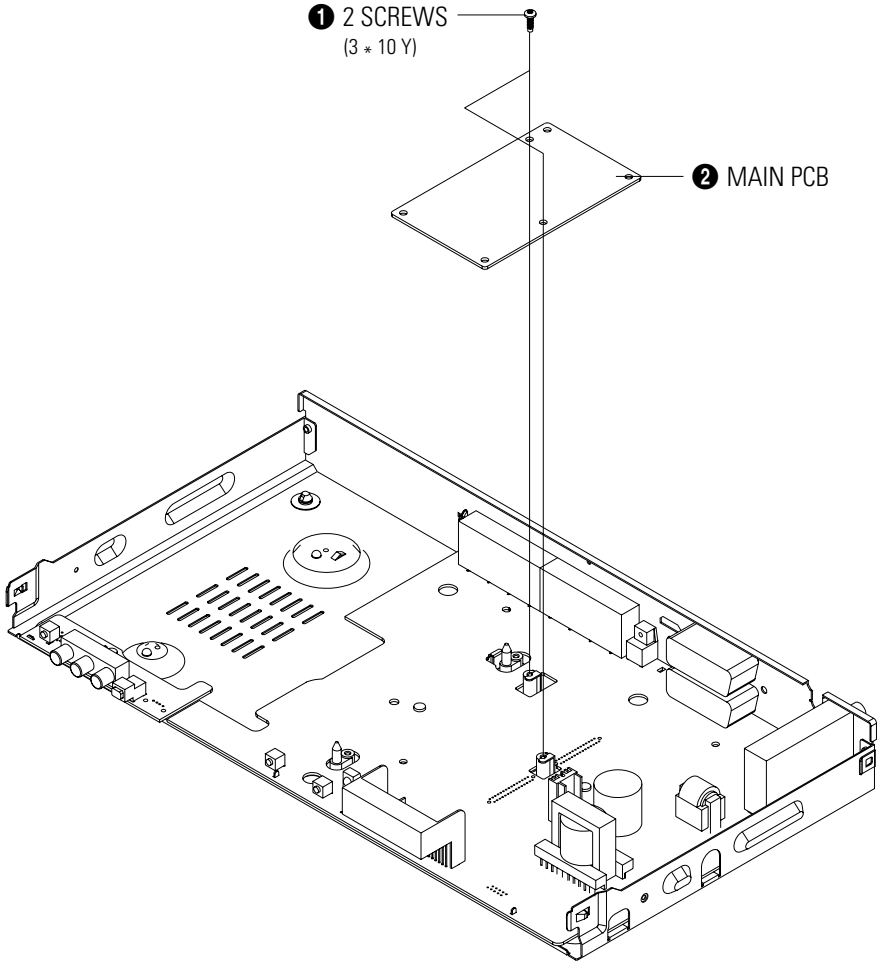


Fig. 4-4 Main PCB Removal

4-1-5 Jack PCB Removal

1) Remove 7 Screws ❶, ❷, ❸ ,❹from the Jack PCB ❺ and lift it up.

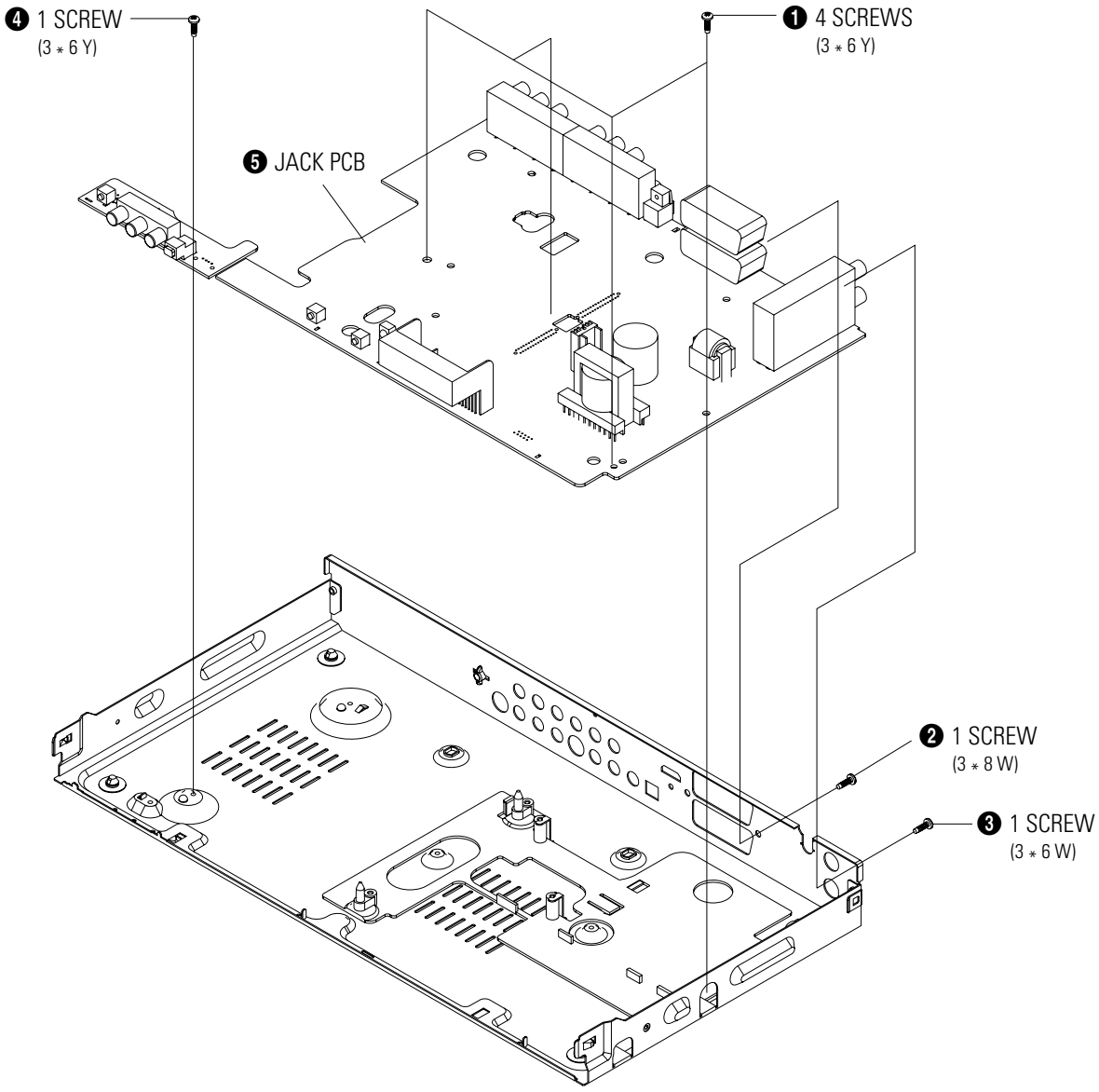


Fig. 4-5 Jack PCB Removal

4-2 PCB Location

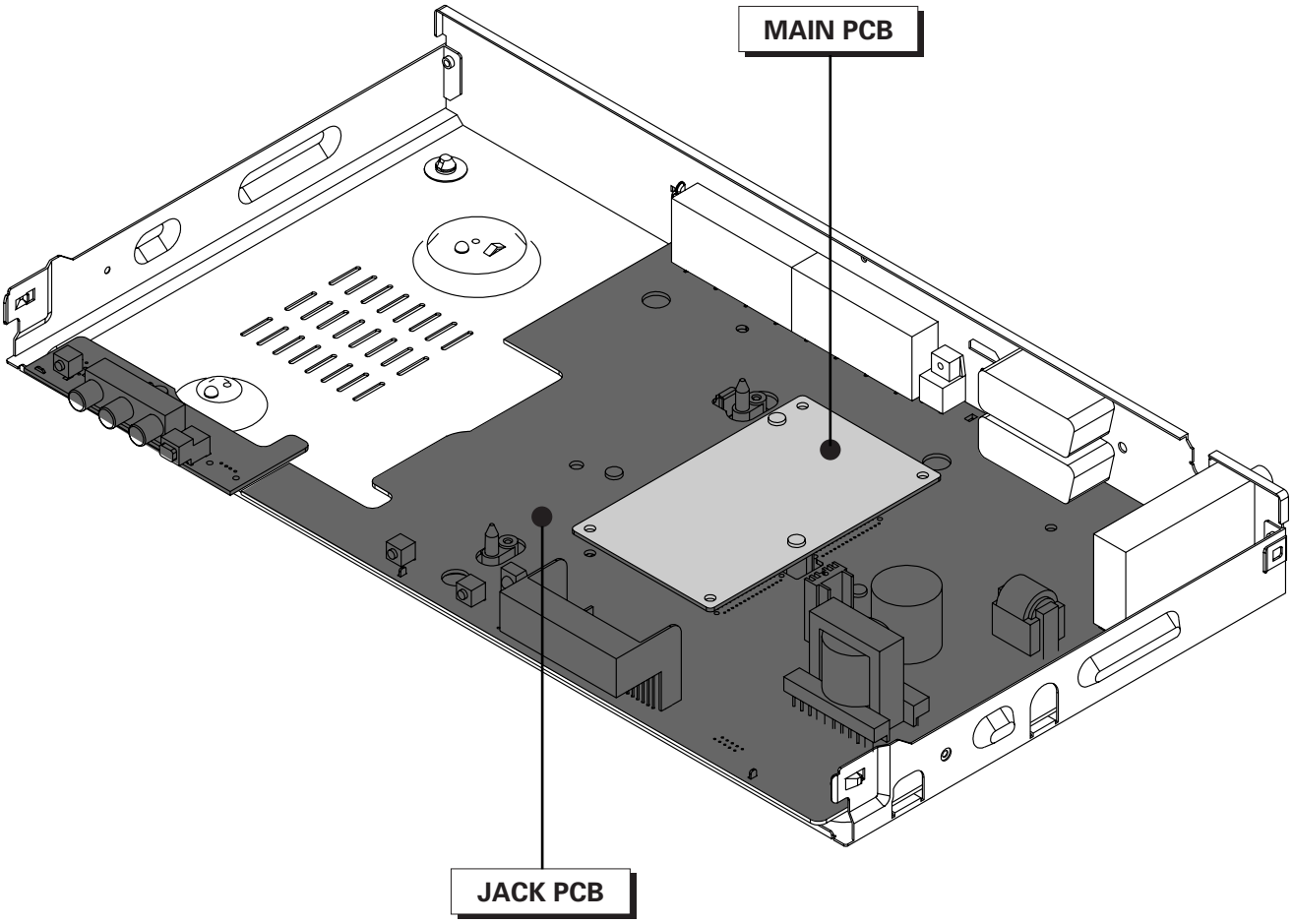
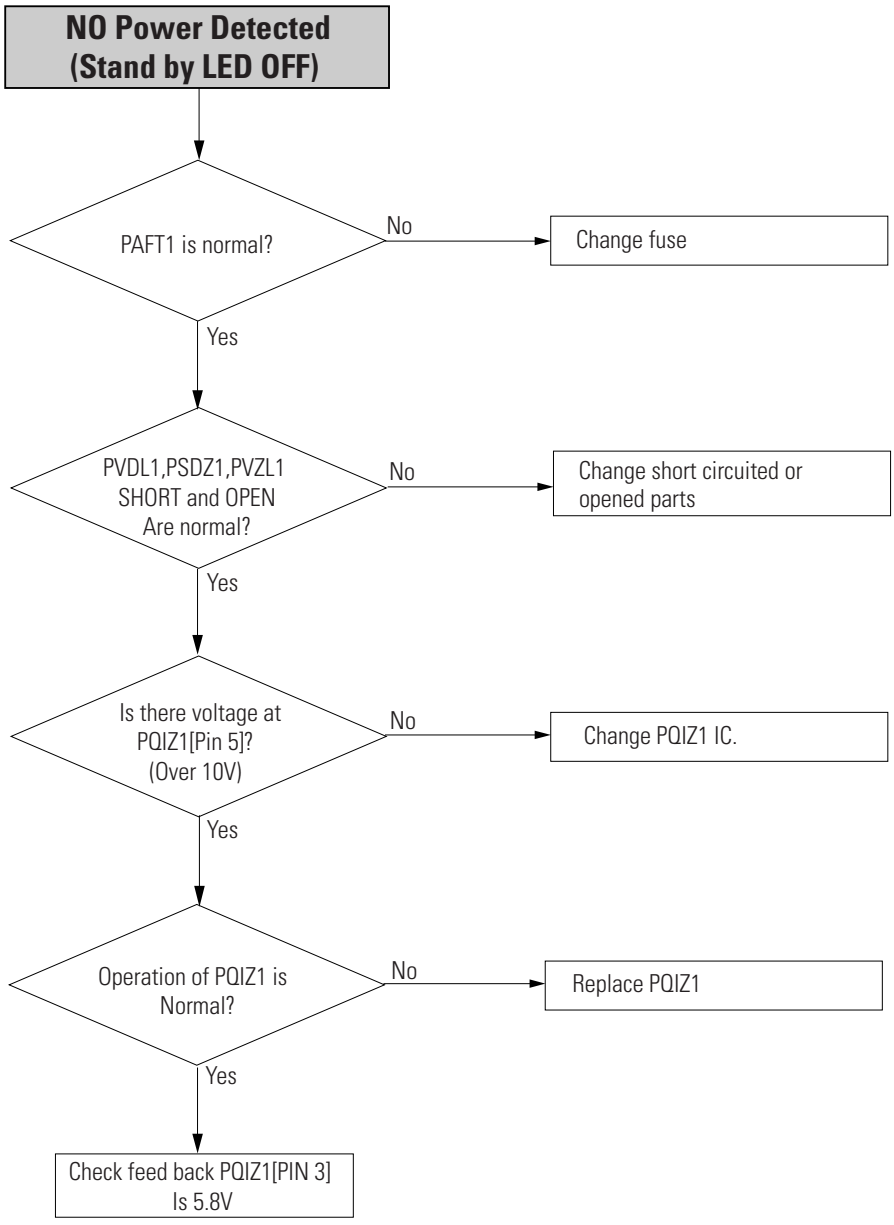
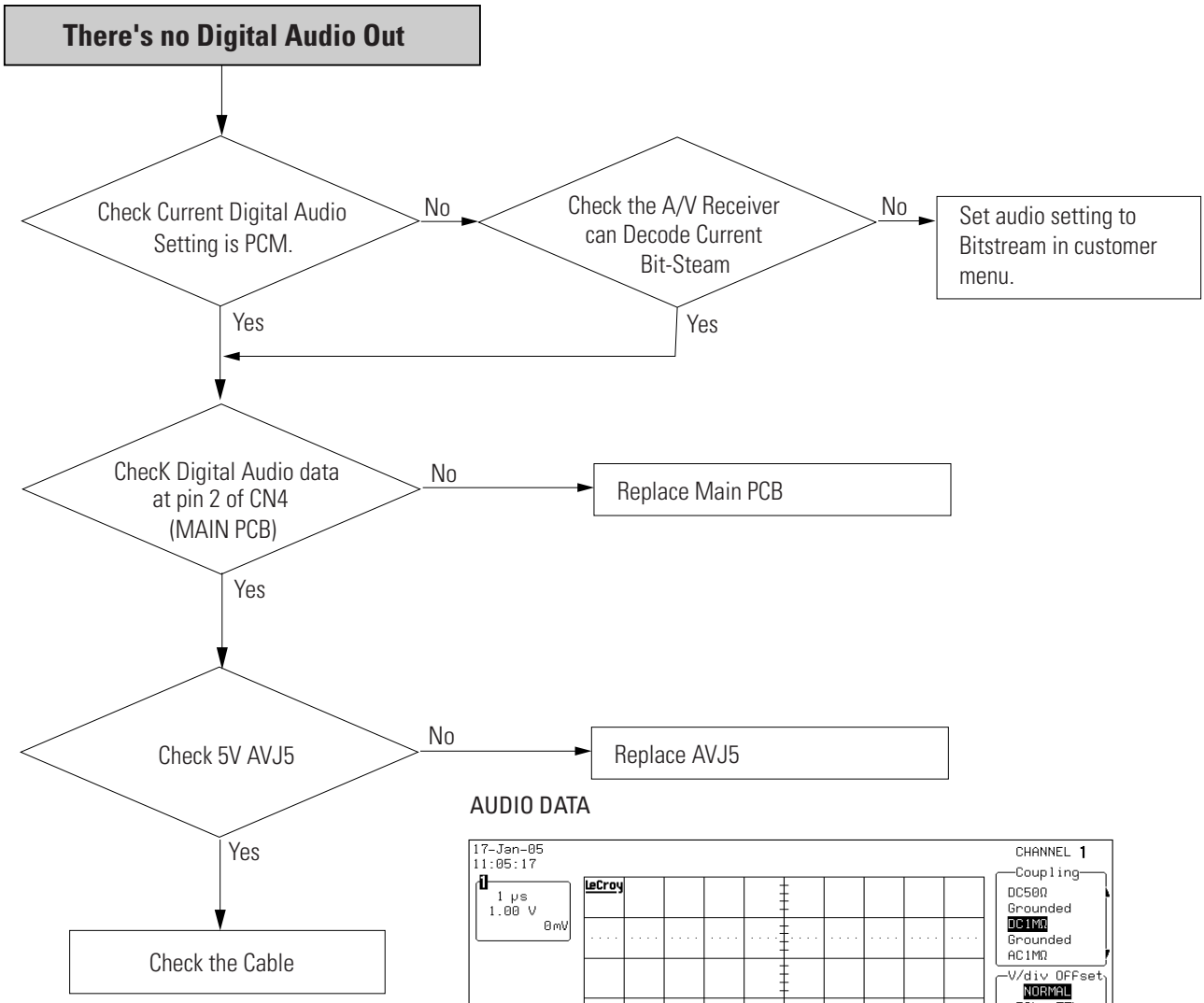


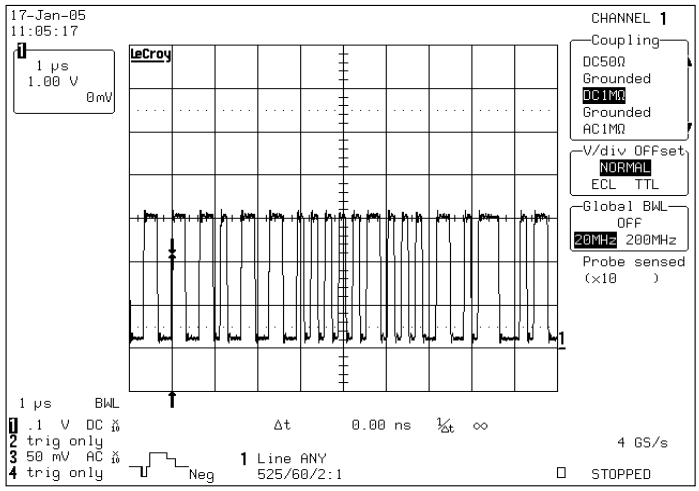
Fig. 4-6 PCB Location

5. Troubleshooting




There's no Digital Audio Out
Check Current Digital Audio Setting is PCM.
No
Check the A/V Receiver can Decode Current Bit-Steam
No
Set audio setting to Bitstream in customer menu.
Yes
Yes
ChecK Digital Audio data at pin 2 of CN4 (MAIN PCB)
No
Replace Main PCB
Yes
Check 5V AVJ5
No
Replace AVJ5
Yes
Check the Cable

AUDIO DATA


17-Jan-05
11:05:17
CHANNEL 1
Coupling
DC50Ω
Grounded
DC1MΩ
Grounded
AC1MΩ
V/div OFFset
NORMAL
ECL TTL
Global BWL
OFF
20MHz 200MHz
Probe sensed
(×10)
1 µs
1.00 V
0mV
LeCroy
1 µs BWL
1 .1 V DC
2 trig only
3 50 mV AC
4 trig only
Δt 0.00 ns
4 GS/s
Neg
1 Line ANY
525/60/2:1
STOPPED

CVBS (Video) output error

Video signal of about 1Vp-p appears at pin 17 of IC216.
- No → Check the DIC1 on MAIN PCB
- Yes ↓

Analog signals are Inputted normally VIC1[pin4]
- No → Check the connection between 10Pin in CN3 Of JACK PCB and VIC1
- Yes ↓

Power is Normal(5v) at VIC1[pin1]?
- No → Check the connection between VIC1[pin1] and Power line (VL6, PPIF1).
- Yes ↓

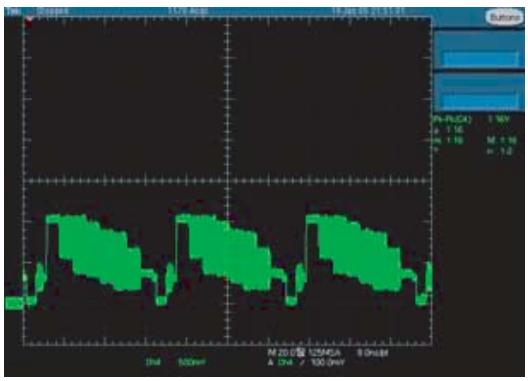
Pin5 in VIC1 is In high state?
- No → Check the connection between VIC1(PIN5) and IC601(PIN89). Check VIC1 peripheral circuit.
- Yes ↓

IF Recorder is under PSO (progressive scan output) MODE, it does not output the CVBS& S-Video signal.

Video signal of About P-P1V appears at Output Jack?
- No → Check the connection between VIC1 and output jack.
- Yes ↓

Check the RCA Cable

CVBS(Color-bar)



S-Video output error

Pin10 and Pin8 in MCN2 of Jack PCB or CN2 of Main PCB has * normal level?

No → Check the DIC1 on MAIN PCB

Yes

Analog signals are Inputted normally VIC1(pin4,2)

No → Check the connection between Pin10 and Pin8 in CN3 Of JACK PCB and VIC1

Yes

Power is Normal(5v) at VIC1(pin1)?

No → Check the connection between VIC1[pin1] and Power line (VL6, PPIF1).

Yes

IF Recorder is under PSO (progressive scan output) MODE, it does not output the CVBS& S-Video signal.

Pin5 in VIC1 is In high state?

No → Check the connection between VIC1(PIN5) and IC601(PIN89). Check VIC1 peripheral circuit.

Yes

Nomal level
: pin 10 is 1Vpk-pk
pin 8 is 0.28V on color burst

Video signal of About P-P1V appears at Output Jack?

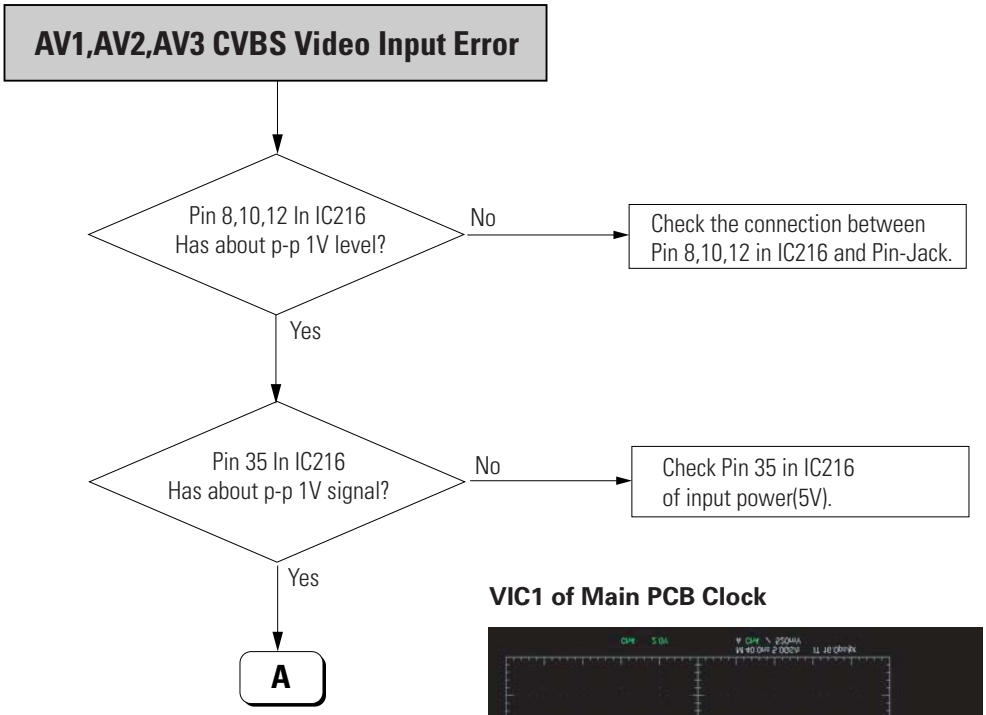
No → Check the connection between VIC1 and output jack.

Yes

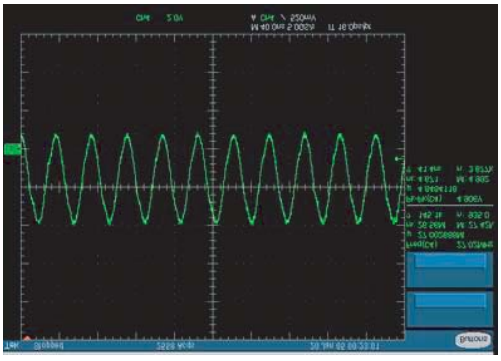
Check the RCA cable

Y(Color-bar)

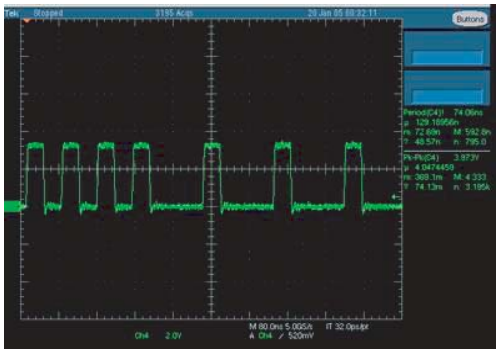
C(Color-bar)

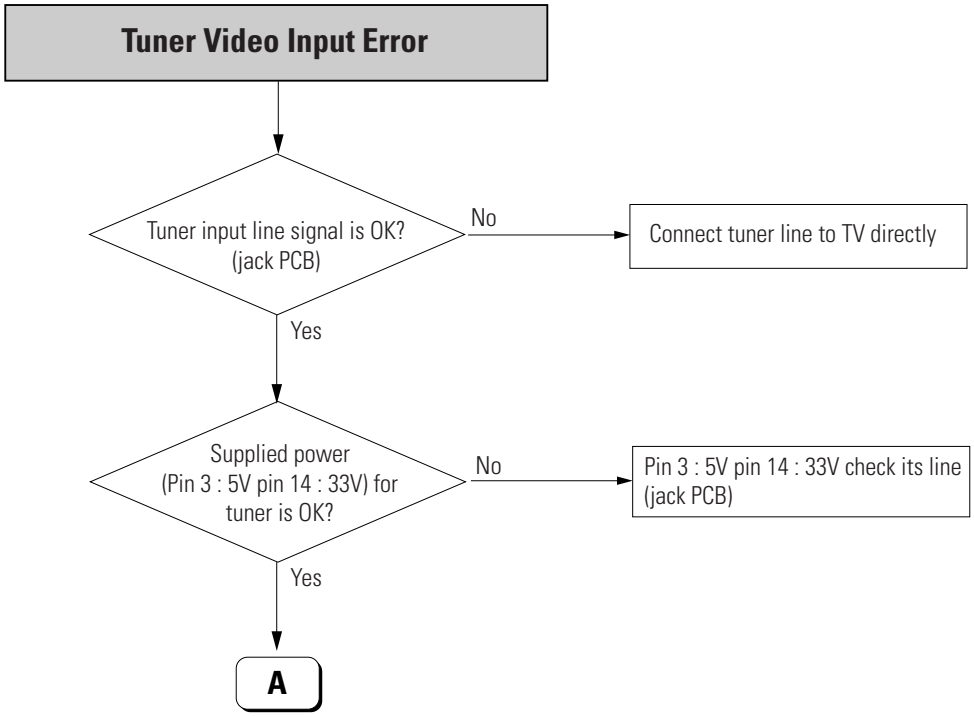


VIC1 of Main PCB Clock



VIC1 of Main PCB DATA




Tuner Video Input Error
Tuner input line signal is OK? (jack PCB)
No
Connect tuner line to TV directly
Yes
Supplied power (Pin 3 : 5V pin 14 : 33V) for tuner is OK?
No
Pin 3 : 5V pin 14 : 33V check its line (jack PCB)
Yes
A

Component output error

Pin2/4/6 in CN3 of Jack PCB or CN2 of Main PCB has * normal level?
- No → Check the DIC1 on MAIN B/D.
- Yes ↓

Analog signals are Inputted normally VIC1(pin6/8/9)
- No → Check the connection between Pin2/4/6 in CN3 Of JACK PCB and VIC1(pin6/8/9)
- Yes ↓

Power is Normal(5v) at VIC1(pin1)?
- No → Check the connection between VIC1[pin1] and Power line (VL6, PPIF1).
- Yes ↓

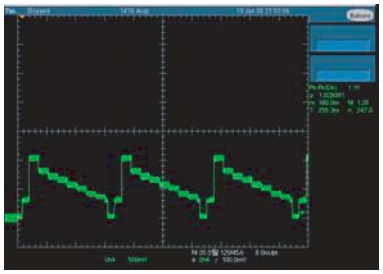
Pin13 in VIC1 is In high state?
- No → Check the connection between VIC1(PIN3) and IC601(PIN89). Check VIC1 peripheral circuit.
- Yes ↓

Video signal of About 1V pk-pk appears at Output Jack?
- No → Check the connection between VIC1 and output jack.
- Yes ↓

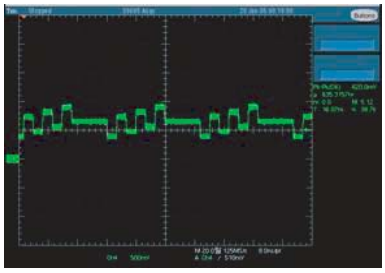
Check the RCA cable

Nomal level
: pin 6 is 1Vpk-pk
pin 2/4 is ± 0.35V

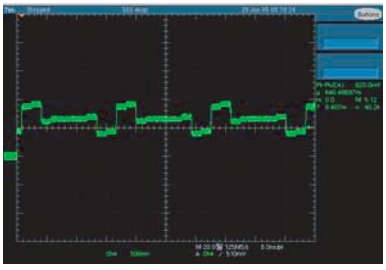
Y(Color-bar)

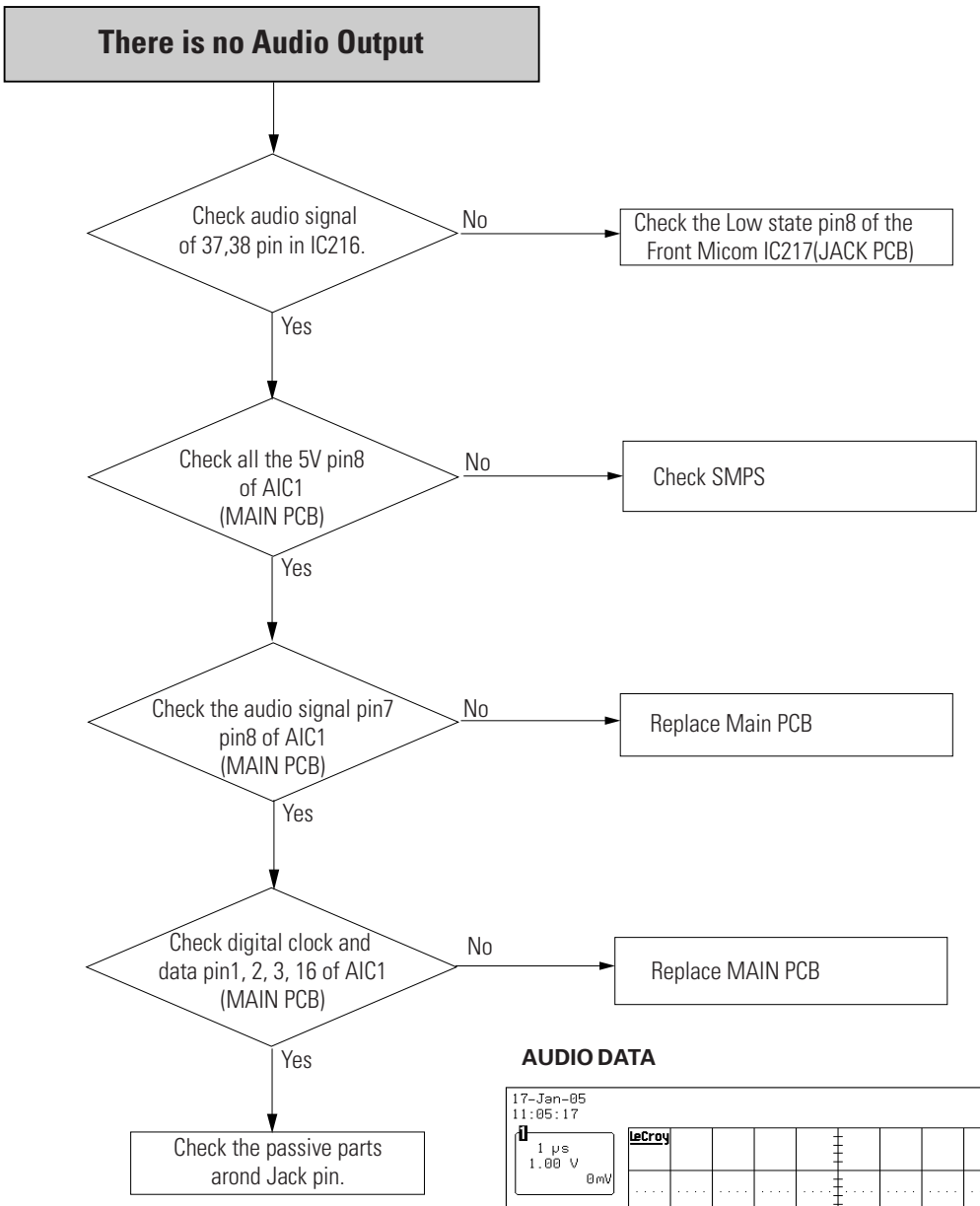


Pb(Color-bar)

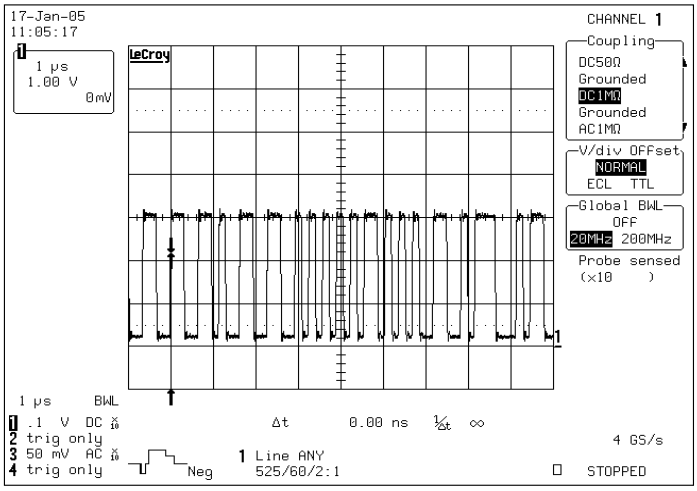


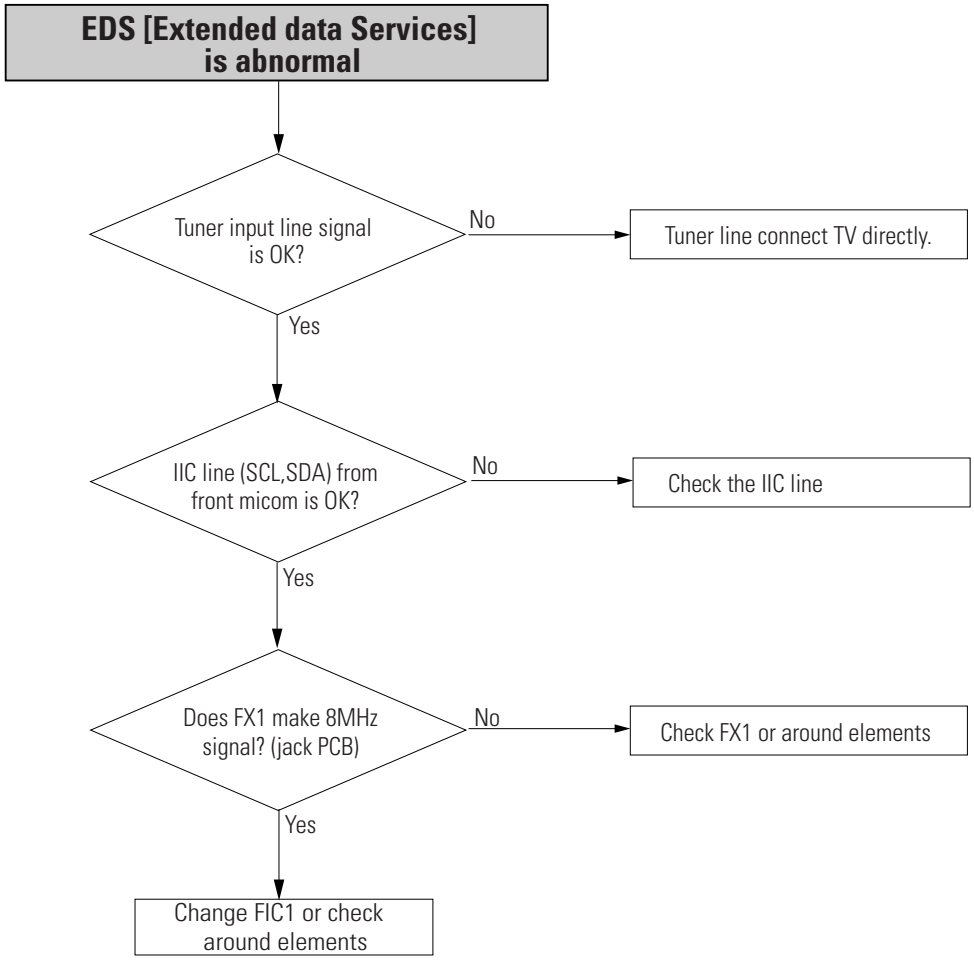
Pr(Color-bar)

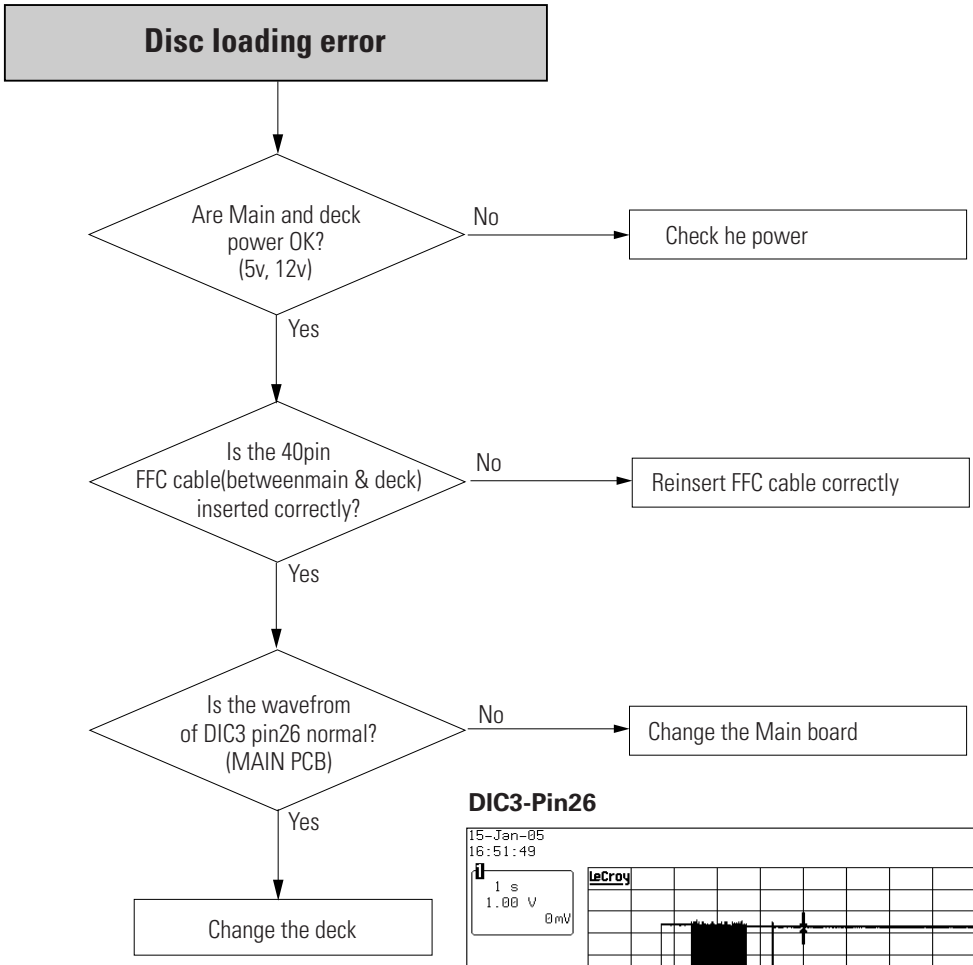



There is no Audio Output
Check audio signal of 37,38 pin in IC216.
No
Check the Low state pin8 of the Front Micom IC217(JACK PCB)
Yes
Check all the 5V pin8 of AIC1 (MAIN PCB)
No
Check SMPS
Yes
Check the audio signal pin7 pin8 of AIC1 (MAIN PCB)
No
Replace Main PCB
Yes
Check digital clock and data pin1, 2, 3, 16 of AIC1 (MAIN PCB)
No
Replace MAIN PCB
Yes
Check the passive parts arond Jack pin.

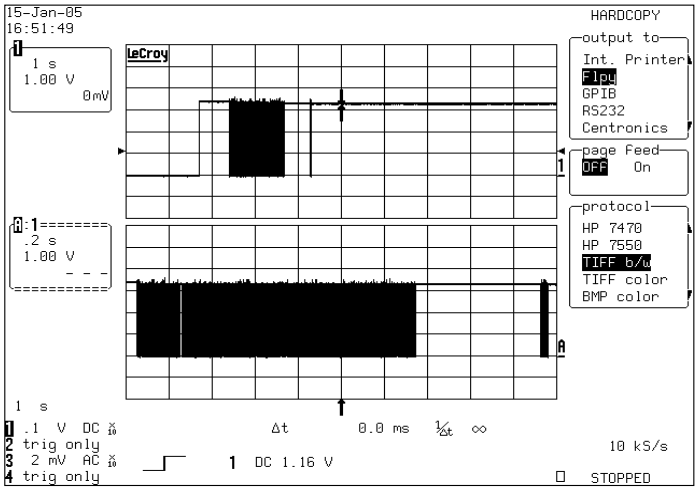
AUDIO DATA

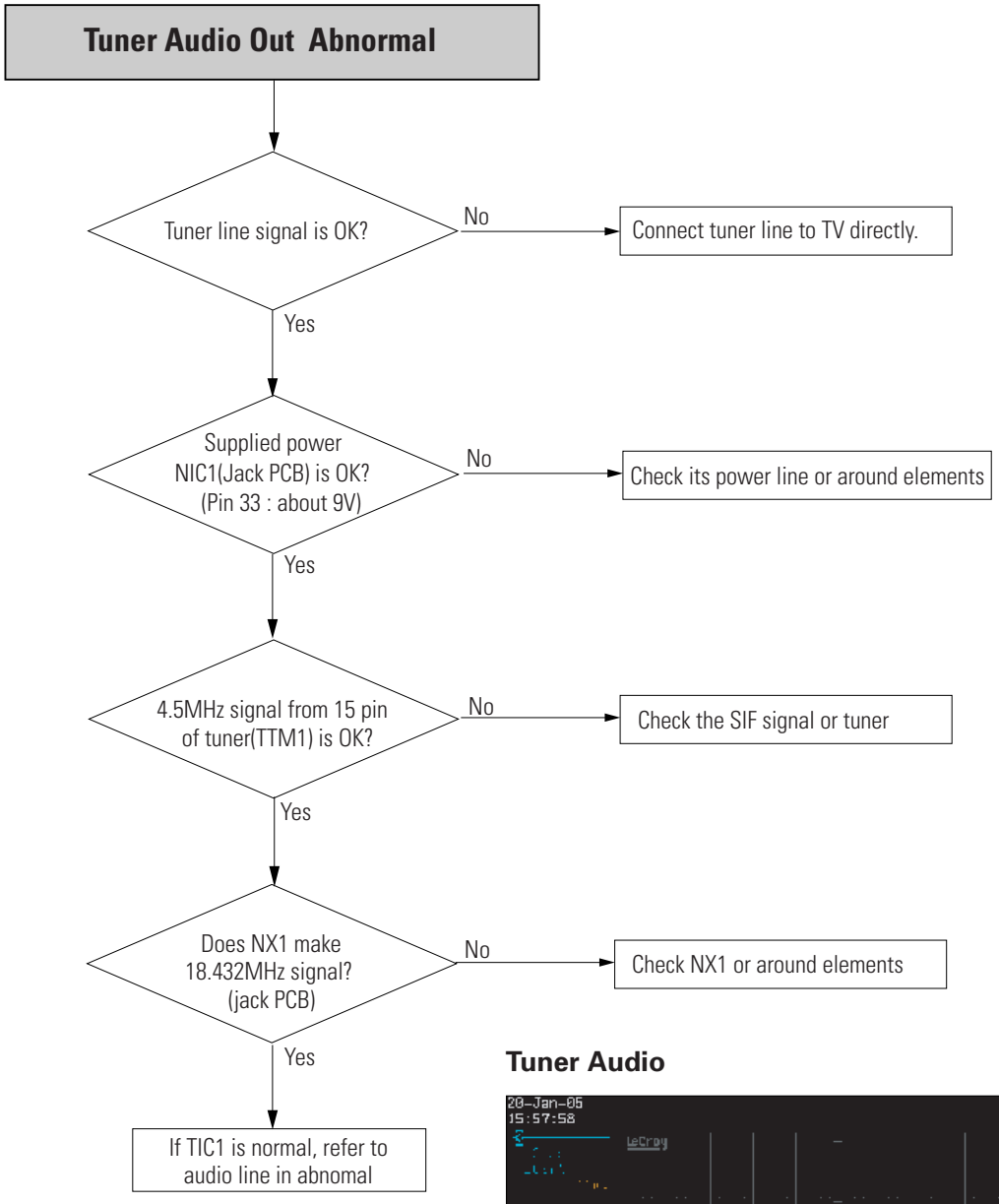

17-Jan-05
11:05:17
CHANNEL 1
Coupling
DC50Ω
Grounded
DC1MΩ
Grounded
AC1MΩ
V/div OFFset
NORMAL
ECL TTL
Global BWL
OFF
20MHz 200MHz
Probe sensed
(×10)
1 µs
1.00 V
0mV
LeCroy
1 µs BWL
Δt 0.00 ns
4 GS/s
1 .1 V DC
2 trig only
3 50 mV AC
4 trig only
Neg
1 Line ANY
525/60/2:1
STOPPED


EDS [Extended data Services] is abnormal
Tuner input line signal is OK?
No
Tuner line connect TV directly.
Yes
IIC line (SCL,SDA) from front micom is OK?
No
Check the IIC line
Yes
Does FX1 make 8MHz signal? (jack PCB)
No
Check FX1 or around elements
Yes
Change FIC1 or check around elements

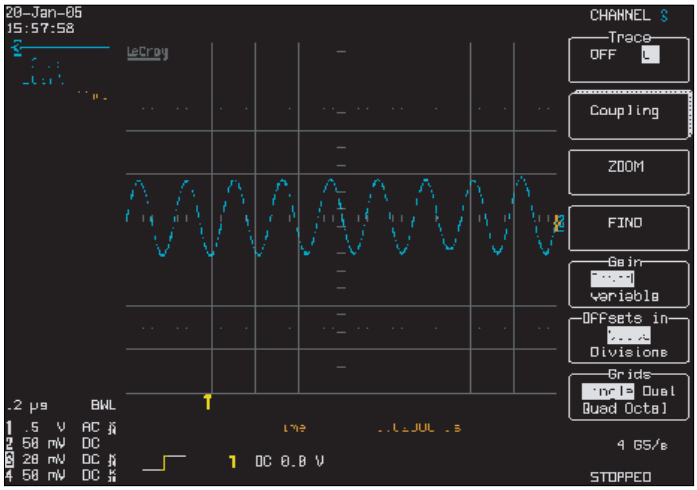

Disc loading error
Are Main and deck power OK? (5v, 12v)
No
Check he power
Yes
Is the 40pin FFC cable(betweenmain & deck) inserted correctly?
No
Reinsert FFC cable correctly
Yes
Is the wavefrom of DIC3 pin26 normal? (MAIN PCB)
No
Change the Main board
Yes
Change the deck

DIC3-Pin26


15-Jan-05
16:51:49
HARDCOPY
output to
Int. Printer
Flpy
GPIB
RS232
Centronics
page Feed
OFF On
protocol
HP 7470
HP 7550
TIFF b/w
TIFF color
BMP color
LeCroy
1 s
1.00 V
0mV
.2 s
1.00 V
1 s
.1 V DC
trig only
2 mV AC
trig only
Δt
0.0 ms
∞
10 kS/s
DC 1.16 V
STOPPED


Tuner Audio Out Abnormal
Tuner line signal is OK?
No
Connect tuner line to TV directly.
Yes
Supplied power NIC1(Jack PCB) is OK? (Pin 33 : about 9V)
No
Check its power line or around elements
Yes
4.5MHz signal from 15 pin of tuner(TTM1) is OK?
No
Check the SIF signal or tuner
Yes
Does NX1 make 18.432MHz signal? (jack PCB)
No
Check NX1 or around elements
Yes
If TIC1 is normal, refer to audio line in abnomal

Tuner Audio


20-Jan-05
15:57:58
LeCroy
CHANNEL
Trace
OFF
Coupling
ZOOM
FIND
Gain
variable
Offsets in
Divisions
Grids
Dual
Quad
Octal
.2 µs
BWL
1 .5 V AC
2 50 mV DC
3 20 mV DC
4 50 mV DC
1 DC 0.0 V
4 GS/s
STOPPED

MEMO

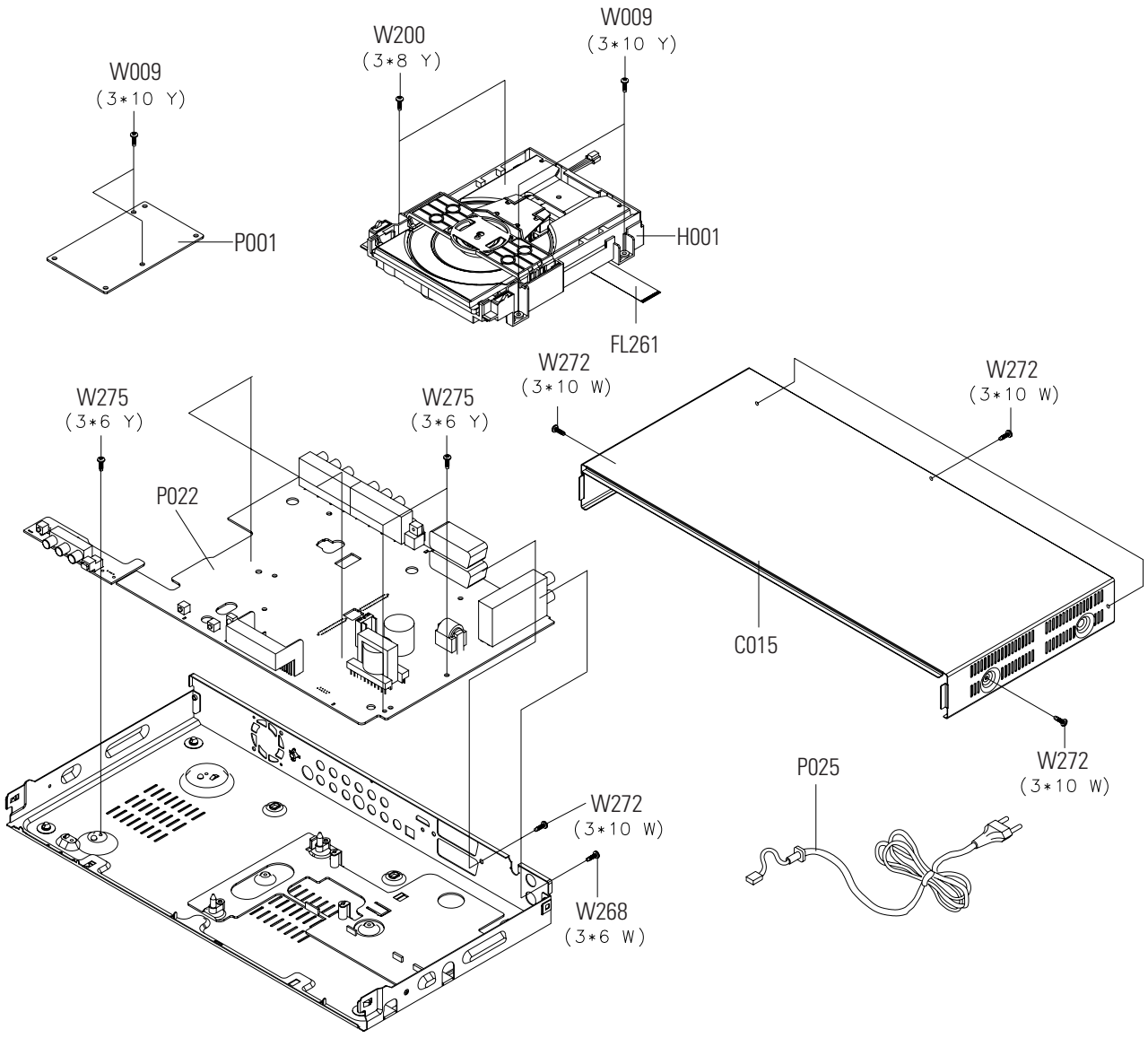
6. Exploded View and Parts List

Page

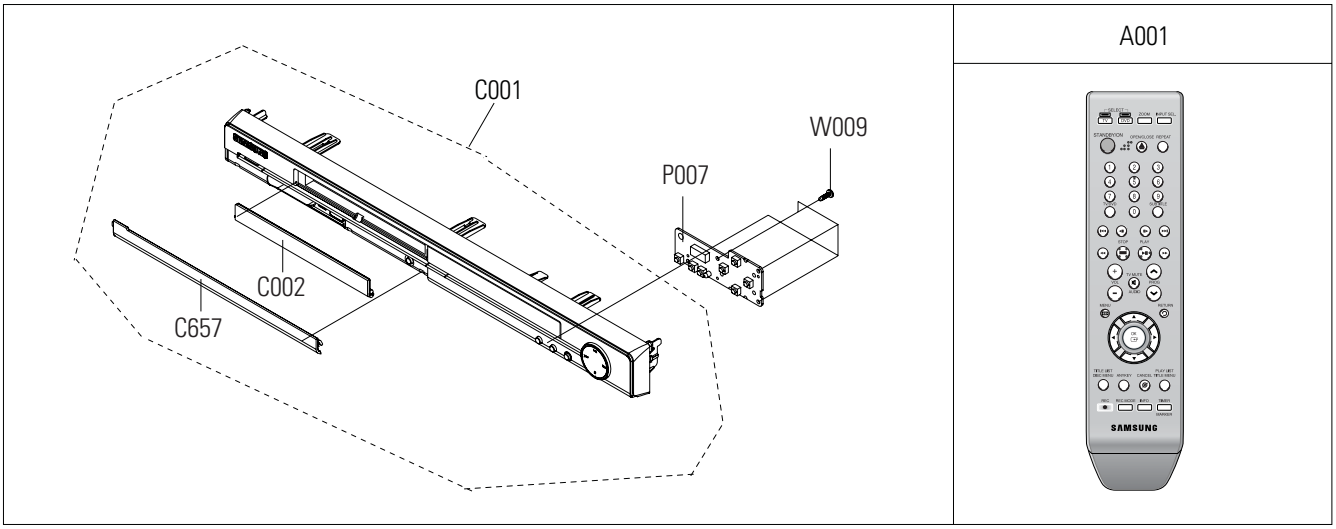
6-1 Cabinet Assembly (DVD-R130) - 6-2

6-2 Cabinet Assembly (DVD-R131) - 6-4

6-1 Cabinet Assembly (DVD-R130)

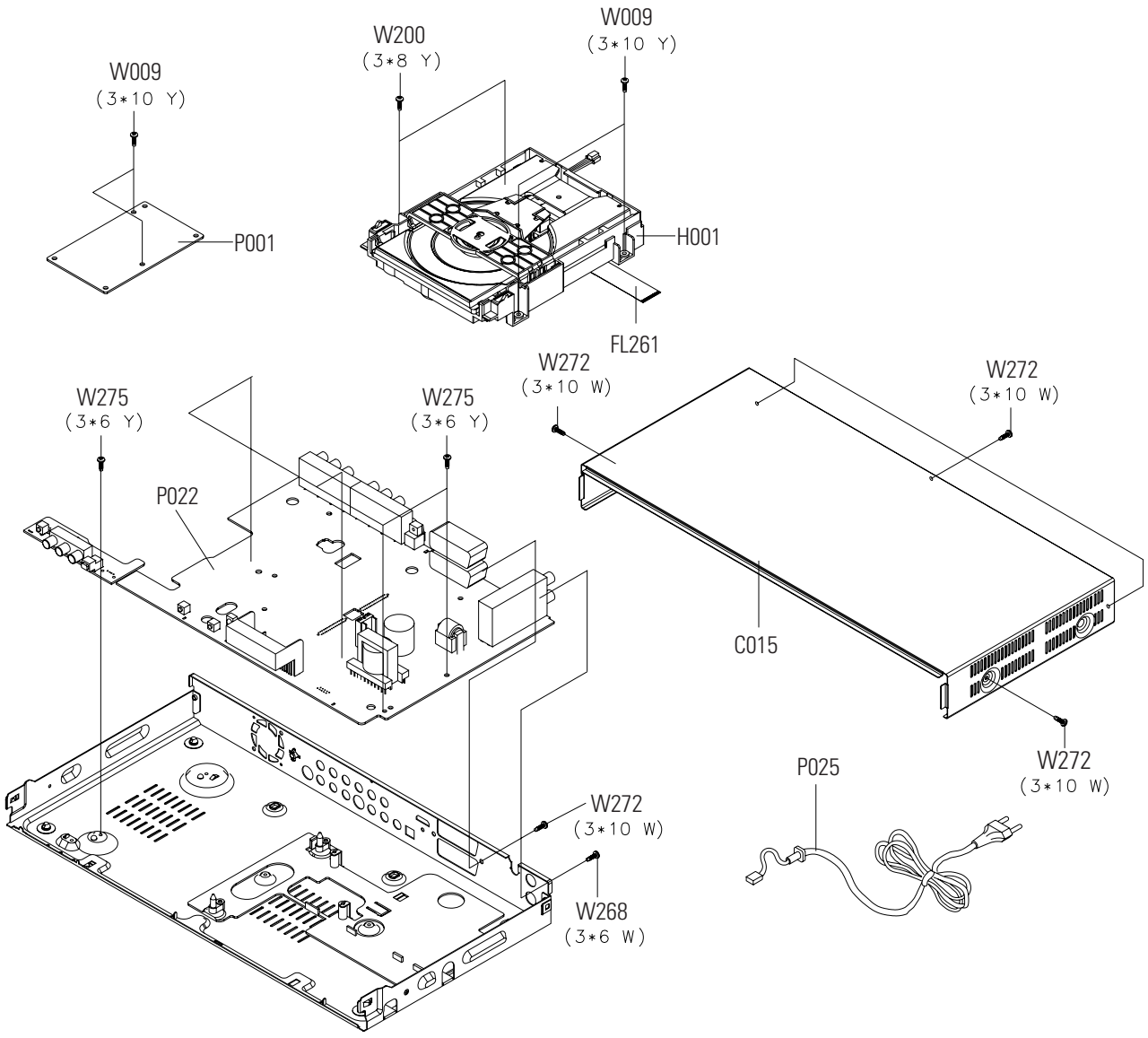


● **S.N.A.: Service Not Available**

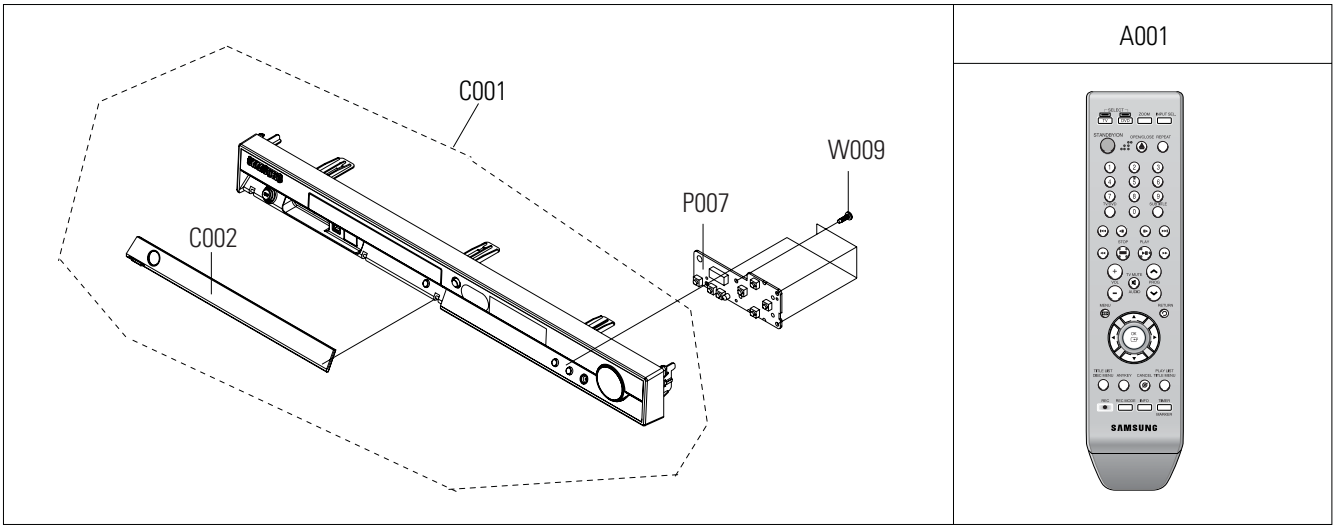


Loc. No	Parts No.	Description ; Specification	Q'ty	S.N.A	Remark
A001	AK59-00055B	REMOCON-ASSY;DVD-R130/XEG,SEC,197.	1	SA	
C001	AK97-01447K	ASSY-CABINET FRONT;HIPS 94 HB,DVD-	1	SA	
C002	AK64-01432A	DOOR-TRAY;DVD-R130,ABS 94HB,T2,H15	1	SA	
C015	AK64-01375A	CABINET-TOP;DVD-R110,PCM,T0.6,W430	1	SA	
C657	AK64-01433C	DOOR-JACK;DVD-R130/XEF,ABS 94HB,T2	1	SA	
FL261	3809-001804	FFC CABLE-FLAT;30V,80C,55mm,13P,1m	1	SA	
H001	AK97-01553E	ASSY-LOADER;,-,SV-R3600,LOADER ASS	1	SA	
P001	AK92-00928A	ASSY PCB-MAIN;DVD-R130/XEG,PAL	1	SA	
P007	AK97-01530A	ASSY PCB-KEY PCB;SV-R3600,ANDES	1	SA	
P022	AK92-00822D	ASSY PCB-JACK;DVD-R130/XEV,PAL,CIS	1	SA	
P025	AC39-10019A	CBF-POWER CORD;KKP-419C,H03VVH2-F,	1	SA	
W009	6003-000276	SCREW-TAPTITE;BH,+,-,B,M3,L10,ZPC(	8	SA	
W200	6003-001375	SCREW-TAPTITE;BH,+,B,M3,L8,ZPC(YEL	2	SA	
W268	6003-000254	SCREW-TAPTITE;BH,+,-,S,M3,L6,ZPC(W	1	SA	
W272	6003-001464	SCREW-TAPTITE;BH,+,B,M3,L10,ZPC(WH	6	SA	
W275	6003-001561	SCREW-TAPTITE;BH,+,-,B,M3,L6,ZPC(Y	5	SA	

6-2 Cabinet Assembly (DVD-R131)



● **S.N.A.: Service Not Available**



Loc. No	Parts No.	Description ; Specification	Q'ty	S.N.A	Remark
A001	AK59-00055B	REMOCON-ASSY;DVD-R130/XEG,SEC,197.5*48*2	1	SA	
C001	AK97-01464C	ASSY-CABINET FRONT;HIPS 94HB,DVD-R129,06	1	SA	
C002	AK64-01690A	DOOR-TRAY;DVD-R135,ABS 94HB,T2,H15,W150,	1	SA	
C015	AK64-01375B	CABINET-TOP;DVD-R130E,PCM,T0.6,W430,L220	1	SA	
C657	AK64-01691C	DOOR-JACK;DVD-R129/XEF,ABS 94HB,T2,H15,W	1	SA	
FL261	3809-001793	FFC CABLE-FLAT;30V,80C,90mm,40P,0.5mm,UL	1	SA	
H001	AK97-01553A	ASSY-LOADER;-,SV-R3600,LOADER ASSY	1	SA	
P001	AK92-00928B	ASSY PCB-MAIN;DVD-R128/XEG,PAL,W/O DV	1	SA	
P007	AK92-00958A	ASSY PCB-KEY;DVD-R129/XEG,PAL,A2 TOOL	1	SA	
P022	AK92-00822K	ASSY PCB-JACK;DVD-R129/XEG,PAL,W/O DV IN	1	SA	
P025	AC39-10019A	CBF-POWER CORD;KKP-419C,H03VVH2-F,VDE/KE	1	SA	
W009	6003-000276	SCREW-TAPTITE;BH,+,-,B,M3,L10,ZPC(YEL),S	8	SA	
W200	6003-001375	SCREW-TAPTITE;BH,+,B,M3,L8,ZPC(YEL),SWRC	2	SA	
W268	6003-000254	SCREW-TAPTITE;BH,+,-,S,M3,L6,ZPC(WHT),SW	1	SA	
W272	6003-001464	SCREW-TAPTITE;BH,+,B,M3,L10,ZPC(WHT)	6	SA	
W275	6003-001561	SCREW-TAPTITE;BH,+,-,B,M3,L6,ZPC(YEL),SW	5	SA	

MEMO

7. Electrical Parts List

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
P001	**AK92-00928A**	**ASSY PCB-MAIN;DVD-R130/XEG,PAL**	**1**	**SA**	
AC1	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
AC18	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
AE1	2402-001096	C-AL,SMD;220UF,20%,16V,GP,TP,6.6X6	1	SA	
AE2	2402-000176	C-AL,SMD;10uF,20%,16V,GP,TP,4.3x4.	1	SA	
AIC1	1002-001395	IC-D/A CONVERTER;PCM1753,24Bit,SSO	1	SA	
AL1	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70M	1	SA	
CC1	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
CC2	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
CC3	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
CC4	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
CE1	2402-001059	C-AL,SMD;220UF,20%,6.3V,-,TP,6X6.6	1	SA	
CE3	2402-001059	C-AL,SMD;220UF,20%,6.3V,-,TP,6X6.6	1	SA	
CE4	2402-001059	C-AL,SMD;220UF,20%,6.3V,-,TP,6X6.6	1	SA	
CN5	3708-001935	CONNECTOR-FPC/FFC/PIC;40P,0.5mm,SM	1	SA	
CON1	3710-002075	SOCKET-BOARD TO BOARD;30P,2R,2MM,S	1	SA	
CON2	3710-002075	SOCKET-BOARD TO BOARD;30P,2R,2MM,S	1	SA	
CR1	2007-000083	R-CHIP;3Kohm,5%,1/10W,TP,1608	1	SA	
CR10	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
CR11	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
CR2	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA	
CR3	2007-000079	R-CHIP;1.8Kohm,5%,1/10W,TP,1608	1	SA	
CR4	2007-000082	R-CHIP;3.3Kohm,5%,1/10W,TP,1608	1	SA	
DC1	2203-000384	C-CER,CHIP;0.015nF,5%,50V,C0G,1608	1	SA	
DC10	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC11	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC12	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC13	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC14	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC15	2203-001554	C-CER,CHIP;1.8nF,10%,50V,X7R,TP,16	1	SA	
DC16	2203-001554	C-CER,CHIP;1.8nF,10%,50V,X7R,TP,16	1	SA	
DC17	2203-001554	C-CER,CHIP;1.8nF,10%,50V,X7R,TP,16	1	SA	
DC18	2203-001554	C-CER,CHIP;1.8nF,10%,50V,X7R,TP,16	1	SA	
DC2	2203-000332	C-CER,CHIP;0.012nF,5%,50V,C0G,1608	1	SA	
DC20	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC22	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC23	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC24	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC25	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC26	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC27	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC28	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC29	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC30	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC31	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC32	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC33	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC34	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC35	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC36	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC37	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC38	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC39	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC4	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC40	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC41	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC42	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC43	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC44	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC45	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC46	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC47	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC48	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC49	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC50	2203-000975	C-CER,CHIP;47nF,10%,25V,X7R,TP,160	1	SA	
DC51	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC52	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC53	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC54	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC56	2203-000440	C-CER,CHIP;1nF,10%,50V,X7R,1608	1	SA	
DC57	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC58	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC59	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC6	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC60	2203-000440	C-CER,CHIP;1nF,10%,50V,X7R,1608	1	SA	
DC61	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC62	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC63	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC64	2203-000440	C-CER,CHIP;1nF,10%,50V,X7R,1608	1	SA	
DC65	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC66	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC67	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC68	2203-000440	C-CER,CHIP;1nF,10%,50V,X7R,1608	1	SA	
DC69	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC7	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC70	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC71	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC72	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC73	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC74	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC75	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC76	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC77	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC78	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC79	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC8	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC80	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC81	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC82	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC83	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC84	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC85	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	

This Document can not be used without Samsung's authorization

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
DC86	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC87	2203-001683	C-CER,CHIP;0.068nF,5%,50V,NP0,1608	1	SA	
DC89	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC9	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC90	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC91	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC92	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC93	2203-000315	C-CER,CHIP;0.12nF,5%,50V,C0G,1608	1	SA	
DC94	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC95	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC96	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DC97	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
DE2	2402-000007	C-AL,SMD;22uF,20%,6.3V,GP,TP,4.3x4	1	SA	
DE3	2402-001059	C-AL,SMD;220UF,20%,6.3V,-,TP,6X6.6	1	SA	
DE4	2402-001059	C-AL,SMD;220UF,20%,6.3V,-,TP,6X6.6	1	SA	
DE5	2402-001059	C-AL,SMD;220UF,20%,6.3V,-,TP,6X6.6	1	SA	
DE6	2402-001059	C-AL,SMD;220UF,20%,6.3V,-,TP,6X6.6	1	SA	
DE7	2402-001059	C-AL,SMD;220UF,20%,6.3V,-,TP,6X6.6	1	SA	
DE8	2402-001059	C-AL,SMD;220UF,20%,6.3V,-,TP,6X6.6	1	SA	
DIC1	1205-002844	IC-CODEC;S5L3210,LQFP,256P,28x28mm	1	SA	
DIC2	1105-001563	IC-DRAM;HYB25D256160CE-6,16Mx16Bit	1	SA	
DIC3	1107-001242	IC-FLASH MEMORY;39VF160,1Mx16,TSOP	1	SNA	
DIC5	1103-001134	IC-EEPROM;24C040,512x8,SOP,8P,5.13	1	SA	
DIC6	1203-003038	IC-POSI.ADJUST REG.;LP2995,SO,8P,4	1	SA	
DIC7	0801-002701	IC-CMOS LOGIC;74VHCT125A,BUFFER,TS	1	SA	
DIC8	0801-002166	IC-CMOS LOGIC;7SHU04,INVERTER,SSOP	1	SA	
DR1	2007-000072	R-CHIP;47ohm,5%,1/10W,TP,1608	1	SA	
DR12	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
DR13	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
DR14	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
DR15	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
DR16	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
DR17	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
DR18	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
DR19	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
DR2	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
DR20	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
DR21	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
DR22	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
DR23	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
DR24	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
DR25	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
DR3	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
DR30	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
DR32	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
DR34	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
DR35	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
DR36	2007-000086	R-CHIP;5.6Kohm,5%,1/10W,TP,1608	1	SA	
DR37	2007-000077	R-CHIP;470ohm,5%,1/10W,TP,1608	1	SA	
DR38	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
DR39	2007-000102	R-CHIP;100Kohm,5%,1/10W,TP,1608	1	SA	
DR40	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
DR41	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA	
DR42	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA	
DR43	2007-001014	R-CHIP;510HM,5%,1/10W,TP,1608	1	SA	

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
DR44	2007-001014	R-CHIP;510HM,5%,1/10W,TP,1608	1	SA	
DR47	2007-001014	R-CHIP;510HM,5%,1/10W,TP,1608	1	SA	
DR48	2007-001014	R-CHIP;510HM,5%,1/10W,TP,1608	1	SA	
DR49	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
DR5	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
DR50	2007-000113	R-CHIP;33ohm,5%,1/10W,TP,1608	1	SA	
DR51	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA	
DR52	2007-000842	R-CHIP;3Kohm,1%,1/10W,TP,1608	1	SA	
DR55	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA	
DR6	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
DR64	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
DR65	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
DR66	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
DR67	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
DR68	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
DR69	3301-001309	BEAD-SMD;47ohm,1608,TP,-,-	1	SA	
DR7	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
DR70	3301-001309	BEAD-SMD;47ohm,1608,TP,-,-	1	SA	
DR71	2007-000072	R-CHIP;47ohm,5%,1/10W,TP,1608	1	SA	
DR72	2007-000072	R-CHIP;47ohm,5%,1/10W,TP,1608	1	SA	
DR74	2007-000071	R-CHIP;22ohm,5%,1/10W,TP,1608	1	SA	
DR75	2007-000071	R-CHIP;22ohm,5%,1/10W,TP,1608	1	SA	
DR76	2007-000071	R-CHIP;22ohm,5%,1/10W,TP,1608	1	SA	
DR77	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
DR8	2007-000109	R-CHIP;1Mohm,5%,1/10W,TP,1608	1	SA	
DR80	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
DR82	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
DR83	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
DR87	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
DR88	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
DR89	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
DR9	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
DR90	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
DR91	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
DRP1	2011-000585	R-NET;47ohm,5%,1/16W,L,CHIP,8P,TP,	1	SA	
DRP10	2011-000585	R-NET;47ohm,5%,1/16W,L,CHIP,8P,TP,	1	SA	
DRP11	2011-000475	R-NET;33ohm,5%,1/16W,L,CHIP,8P,TP,	1	SA	
DRP12	2011-000475	R-NET;33ohm,5%,1/16W,L,CHIP,8P,TP,	1	SA	
DRP13	2011-000475	R-NET;33ohm,5%,1/16W,L,CHIP,8P,TP,	1	SA	
DRP14	2011-000475	R-NET;33ohm,5%,1/16W,L,CHIP,8P,TP,	1	SA	
DRP15	2011-001194	R-NET;51ohm,5%,1/16W,L,CHIP,8P,TP,	1	SA	
DRP16	2011-001194	R-NET;51ohm,5%,1/16W,L,CHIP,8P,TP,	1	SA	
DRP17	2011-001194	R-NET;51ohm,5%,1/16W,L,CHIP,8P,TP,	1	SA	
DRP18	2011-001194	R-NET;51ohm,5%,1/16W,L,CHIP,8P,TP,	1	SA	
DRP19	2011-001194	R-NET;51ohm,5%,1/16W,L,CHIP,8P,TP,	1	SA	
DRP2	2011-000585	R-NET;47ohm,5%,1/16W,L,CHIP,8P,TP,	1	SA	
DRP20	2011-001194	R-NET;51ohm,5%,1/16W,L,CHIP,8P,TP,	1	SA	
DRP21	2011-001194	R-NET;51ohm,5%,1/16W,L,CHIP,8P,TP,	1	SA	
DRP22	2011-001194	R-NET;51ohm,5%,1/16W,L,CHIP,8P,TP,	1	SA	
DRP23	2011-001194	R-NET;51ohm,5%,1/16W,L,CHIP,8P,TP,	1	SA	
DRP24	2011-000515	R-NET;4.7Kohm,5%,1/16W,L,CHIP,8P,T	1	SA	
DRP25	2011-000515	R-NET;4.7Kohm,5%,1/16W,L,CHIP,8P,T	1	SA	
DRP26	2011-000515	R-NET;4.7Kohm,5%,1/16W,L,CHIP,8P,T	1	SA	
DRP27	2011-000515	R-NET;4.7Kohm,5%,1/16W,L,CHIP,8P,T	1	SA	

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
DRP3	2011-000585	R-NET;47ohm,5%,1/16W,L,CHIP,8P,TP,	1	SA	
DRP4	2011-000585	R-NET;47ohm,5%,1/16W,L,CHIP,8P,TP,	1	SA	
DRP5	2011-000585	R-NET;47ohm,5%,1/16W,L,CHIP,8P,TP,	1	SA	
DRP6	2011-000585	R-NET;47ohm,5%,1/16W,L,CHIP,8P,TP,	1	SA	
DRP7	2011-000585	R-NET;47ohm,5%,1/16W,L,CHIP,8P,TP,	1	SA	
DRP9	2011-000585	R-NET;47ohm,5%,1/16W,L,CHIP,8P,TP,	1	SA	
RIC1	1203-003996	IC-POSI.FIXED REG.;KIA78R025F,DPAK	1	SA	
RIC2	1203-003806	IC-POSI.ADJUST REG.;KIA78R000,DPAK	1	SA	
TC1	2203-000851	C-CER,CHIP;0.039nF,5%,50V,C0G,1608	1	SA	
TC10	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
TC11	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
TC12	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
TC13	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
TC14	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
TC15	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
TC2	2203-000851	C-CER,CHIP;0.039nF,5%,50V,C0G,1608	1	SA	
TC3	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
TC4	2203-001607	C-CER,CHIP;0.22nF,5%,50V,NP0,1608	1	SA	
TC5	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
TC6	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
TC7	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
TC8	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
TC9	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
TE1	2402-001238	C-AL,SMD;1uF,20%,50V,HR,TP,4.3x4.3	1	SA	
TE2	2402-001059	C-AL,SMD;220UF,20%,6.3V,-,TP,6X6.6	1	SA	
TIC1	1205-001988	IC-DATA COMM./GEN.;TSB41AB1-PAP,QF	1	SA	
TPR2	2011-000002	R-NET;22ohm,5%,1/16W,L,CHIP,8P,TP,	1	SA	
TR10	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
TR11	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
TR12	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
TR13	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
TR14	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
TR15	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
TR16	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
TR17	2007-001056	R-CHIP;6.2Kohm,5%,1/10W,TP,1608	1	SA	
TR19	2007-001044	R-CHIP;56ohm,5%,1/10W,TP,1608	1	SA	
TR2	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
TR20	2007-001044	R-CHIP;56ohm,5%,1/10W,TP,1608	1	SA	
TR21	2007-001044	R-CHIP;56ohm,5%,1/10W,TP,1608	1	SA	
TR22	2007-001044	R-CHIP;56ohm,5%,1/10W,TP,1608	1	SA	
TR24	2007-000965	R-CHIP;5.1Kohm,5%,1/10W,TP,1608	1	SA	
TR25	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70M	1	SA	
TR26	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
TR9	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
TRP1	2011-000002	R-NET;22ohm,5%,1/16W,L,CHIP,8P,TP,	1	SA	
TY1	2801-004021	CRYSTAL-SMD;24.576MHz,20ppm,28-AAN	1	SA	
VC1	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
VC10	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
VC11	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
VC12	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
VC13	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
VC14	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
VC15	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
VC16	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
VC17	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
VC18	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
VC19	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
VC2	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
VC20	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
VC21	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
VC22	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
VC23	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
VC24	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
VC25	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
VC26	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
VC27	2203-000280	C-CER,CHIP;0.01nF,0.5pF,50V,C0G,16	1	SA	
VC28	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
VC29	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
VC5	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
VC6	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
VC7	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
VC8	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
VC9	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
VE3	2402-001059	C-AL,SMD;220UF,20%,6.3V,-,TP,6X6.6	1	SA	
VE4	2402-001059	C-AL,SMD;220UF,20%,6.3V,-,TP,6X6.6	1	SA	
VIC1	1204-002436	IC-VIDEO DECODER;TW9909,TQFP,80P,1	1	SA	
VL1	2703-000398	INDUCTOR-SMD;10uH,10%,3225	1	SA	
VR14	2007-000113	R-CHIP;33ohm,5%,1/10W,TP,1608	1	SA	
VR15	2007-000080	R-CHIP;2Kohm,5%,1/10W,TP,1608	1	SA	
VR16	2007-000080	R-CHIP;2Kohm,5%,1/10W,TP,1608	1	SA	
VR2	2007-000113	R-CHIP;33ohm,5%,1/10W,TP,1608	1	SA	
VR23	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA	
VR25	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
VRP3	2011-000816	R-NET;100ohm,5%,1/16W,L,CHIP,8P,TP	1	SA	
VRP4	2011-000816	R-NET;100ohm,5%,1/16W,L,CHIP,8P,TP	1	SA	
Y1	2801-004095	CRYSTAL-SMD;27MHz,20ppm,28-ABY,14p	1	SA	
P007	**AK97-01530A**	**ASSY PCB-KEY PCB;SV-R3600,ANDES**	**1**	**SA**	
CN704	3708-001803	CONNECTOR-FPC/FFC/PIC;10P,1.25MM,A	1	SA	
FL286	3809-001667	FFC CABLE-FLAT;30V,80C,70mm,10P,1.	1	SA	
SW703	3404-001182	SWITCH-TACT;DC12V,50MA,100GF,6.0X6	1	SA	
SW705	3404-001182	SWITCH-TACT;DC12V,50MA,100GF,6.0X6	1	SA	
SW706	3404-001182	SWITCH-TACT;DC12V,50MA,100GF,6.0X6	1	SA	
SW707	3404-001182	SWITCH-TACT;DC12V,50MA,100GF,6.0X6	1	SA	
SW708	3404-001182	SWITCH-TACT;DC12V,50MA,100GF,6.0X6	1	SA	
SW709	3404-001182	SWITCH-TACT;DC12V,50MA,100GF,6.0X6	1	SA	
SW710	3404-001182	SWITCH-TACT;DC12V,50MA,100GF,6.0X6	1	SA	
P022	**AK92-00822D**	**ASSY PCB-JACK;DVD-R130/XEV,PAL,CIS**	**1**	**SA**	
AC1	2203-000491	C-CER,CHIP;2.2nF,10%,50V,X7R,1608	1	SA	
AC2	2203-001126	C-CER,CHIP;0.68nF,10%,50V,X7R,1608	1	SA	
AC3	2203-000783	C-CER,CHIP;0.33nF,5%,50V,C0G,1608	1	SA	
AC4	2203-000783	C-CER,CHIP;0.33nF,5%,50V,C0G,1608	1	SA	
AC5	2203-000491	C-CER,CHIP;2.2nF,10%,50V,X7R,1608	1	SA	
AC6	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,1608	1	SA	
AC7	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,1608	1	SA	
AC8	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,1608	1	SA	
ACN1	3708-001695	CONNECTOR-FPC/FFC/PIC;13P,1MM,STRA	1	SA	

This Document can not be used without Samsung's authorization

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
ACN2	3708-001802	CONNECTOR-FPC/FFC/PIC,10P,1.25MM,S	1	SA	
ACN4	3708-001695	CONNECTOR-FPC/FFC/PIC,13P,1MM,STRA	1	SA	
AD1	0401-000005	DIODE-SWITCHING;1N4148,75V,150mA,D	1	SA	
AD2	0401-000005	DIODE-SWITCHING;1N4148,75V,150mA,D	1	SA	
AD3	0401-000005	DIODE-SWITCHING;1N4148,75V,150mA,D	1	SA	
AD4	0401-000005	DIODE-SWITCHING;1N4148,75V,150mA,D	1	SA	
AE1	2401-000249	C-AL;100uF,20%,10V,GP,TP,6.3x5,5	1	SA	
AE2	2401-001249	C-AL;4.7uF,20%,35V,GP,TP,4x5,2.5	1	SA	
AE24	2401-001249	C-AL;4.7uF,20%,35V,GP,TP,4x5,2.5	1	SA	
AE25	2401-001249	C-AL;4.7uF,20%,35V,GP,TP,4x5,2.5	1	SA	
AE26	2401-001249	C-AL;4.7uF,20%,35V,GP,TP,4x5,2.5	1	SA	
AE3	2401-001249	C-AL;4.7uF,20%,35V,GP,TP,4x5,2.5	1	SA	
AE4	2401-003480	C-AL;1000UF,20%,10V,LZ,TP,10X16MM,	1	SA	
AE5	2401-001479	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,	1	SA	
AHC11	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
AHC12	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
AHC14	2203-005221	C-CER,CHIP;15nF,10%,50V,X7R,1608	1	SA	
AHC15	2203-000440	C-CER,CHIP;1nF,10%,50V,X7R,1608	1	SA	
AHC16	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
AHC17	2203-000405	C-CER,CHIP;0.18nF,5%,50V,C0G,1608	1	SA	
AHC18	2203-000440	C-CER,CHIP;1nF,10%,50V,X7R,1608	1	SA	
AHC20	2203-000405	C-CER,CHIP;0.18nF,5%,50V,C0G,1608	1	SA	
AHC21	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
AHD1	0407-000123	DIODE-ARRAY;DAN202K,80V,100mA,CA2-	1	SA	
AHD10	0402-000165	DIODE-RECTIFIER;1N5819,40V,1A,DO-4	1	SA	
AHD11	0401-000005	DIODE-SWITCHING;1N4148,75V,150mA,D	1	SA	
AHD2	0407-000123	DIODE-ARRAY;DAN202K,80V,100mA,CA2-	1	SA	
AHE10	2401-000408	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	1	SA	
AHE11	2401-000408	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	1	SA	
AHE13	2401-000408	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	1	SA	
AHE14	2401-000408	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	1	SA	
AHE15	2401-000408	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	1	SA	
AHE17	2401-001502	C-AL;47uF,20%,16V,GP,TP,6.3x5,2.5	1	SA	
AHE18	2401-003107	C-AL;47uF,20%,16V,GP,TP,5x7,5	1	SA	
AHE20	2401-001249	C-AL;4.7uF,20%,35V,GP,TP,4x5,2.5	1	SA	
AHE21	2401-001250	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	1	SA	
AHE22	2401-001249	C-AL;4.7uF,20%,35V,GP,TP,4x5,2.5	1	SA	
AHE23	2401-001250	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	1	SA	
AHE27	2401-001250	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	1	SA	
AHE28	2401-001250	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	1	SA	
AHE29	2401-001250	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	1	SA	
AHE30	2401-001249	C-AL;4.7uF,20%,35V,GP,TP,4x5,2.5	1	SA	
AHE31	2401-000408	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	1	SA	
AHE32	2401-000408	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	1	SA	
AHE33	2401-000408	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	1	SA	
AHE34	2401-000426	C-AL;10uF,20%,16V,GP,TP,3.5x5,5	1	SA	
AHE35	2401-000918	C-AL;22uF,20%,16V,GP,-,6.3x7,5	1	SA	
AHE36	2401-000598	C-AL;1uF,20%,50V,GP,TP,4x7,5	1	SA	
AHE37	2401-000588	C-AL;1uF,20%,50V,GP,TP,3x5,2.5	1	SA	
AHE38	2401-000588	C-AL;1uF,20%,50V,GP,TP,3x5,2.5	1	SA	
AHE39	2401-000598	C-AL;1uF,20%,50V,GP,TP,4x7,5	1	SA	
AHE40	2401-001250	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	1	SA	
AHE41	2401-001250	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	1	SA	
AHE42	2401-001250	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	1	SA	
AHE43	2401-001250	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	1	SA	
AHE44	2401-000408	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	1	SA	
AHE45	2401-000426	C-AL;10uF,20%,16V,GP,TP,3.5x5,5	1	SA	
AHE46	2401-000408	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	1	SA	
AHE47	2401-000426	C-AL;10uF,20%,16V,GP,TP,3.5x5,5	1	SA	
AHE48	2401-003221	C-AL;100uF,20%,16V,GP,TP,8X5,2.5	1	SA	
AHL1	2701-000002	INDUCTOR-AXIAL;100UH,10%,4298	1	SA	
AHL2	2701-000002	INDUCTOR-AXIAL;100UH,10%,4298	1	SA	
AHL3	2701-000002	INDUCTOR-AXIAL;100UH,10%,4298	1	SA	
AHQ1	0501-000002	TR-SMALL SIGNAL;KSA812,PNP,150MW,S	1	SA	
AHQ10	0501-000398	TR-SMALL SIGNAL;KSC945-Y,NPN,250mW	1	SA	
AHR10	2007-000125	R-CHIP;3.9Kohm,5%,1/10W,TP,1608	1	SA	
AHR11	2007-000125	R-CHIP;3.9Kohm,5%,1/10W,TP,1608	1	SA	
AHR12	2007-000125	R-CHIP;3.9Kohm,5%,1/10W,TP,1608	1	SA	
AHR13	2007-000125	R-CHIP;3.9Kohm,5%,1/10W,TP,1608	1	SA	
AHR14	2007-000125	R-CHIP;3.9Kohm,5%,1/10W,TP,1608	1	SA	
AHR15	2007-000125	R-CHIP;3.9Kohm,5%,1/10W,TP,1608	1	SA	
AHR16	2007-000125	R-CHIP;3.9Kohm,5%,1/10W,TP,1608	1	SA	
AHR17	2007-000125	R-CHIP;3.9Kohm,5%,1/10W,TP,1608	1	SA	
AHR18	2007-000081	R-CHIP;2.7Kohm,5%,1/10W,TP,1608	1	SA	
AHR19	2007-000097	R-CHIP;47Kohm,5%,1/10W,TP,1608	1	SA	
AHR22	2007-000616	R-CHIP;24Kohm,5%,1/10W,TP,1608	1	SA	
AHR23	2001-000539	R-CARBON;24KOHM,5%,1/8W,AA,TP,1.8X	1	SA	
AHR24	2001-000539	R-CARBON;24KOHM,5%,1/8W,AA,TP,1.8X	1	SA	
AHR25	2007-000616	R-CHIP;24Kohm,5%,1/10W,TP,1608	1	SA	
AHR26	2001-000539	R-CARBON;24KOHM,5%,1/8W,AA,TP,1.8X	1	SA	
AHR27	2007-000092	R-CHIP;15Kohm,5%,1/10W,TP,1608	1	SA	
AHR28	2007-000092	R-CHIP;15Kohm,5%,1/10W,TP,1608	1	SA	
AHR29	2007-000092	R-CHIP;15Kohm,5%,1/10W,TP,1608	1	SA	
AHR30	2007-000092	R-CHIP;15Kohm,5%,1/10W,TP,1608	1	SA	
AHR31	2007-000092	R-CHIP;15Kohm,5%,1/10W,TP,1608	1	SA	
AHR32	2007-000092	R-CHIP;15Kohm,5%,1/10W,TP,1608	1	SA	
AHR33	2007-000965	R-CHIP;5.1Kohm,5%,1/10W,TP,1608	1	SA	
AHR34	2007-000091	R-CHIP;12Kohm,5%,1/10W,TP,1608	1	SA	
AHR35	2007-000097	R-CHIP;47Kohm,5%,1/10W,TP,1608	1	SA	
AHR36	2007-000097	R-CHIP;47Kohm,5%,1/10W,TP,1608	1	SA	
AHR37	2007-000091	R-CHIP;12Kohm,5%,1/10W,TP,1608	1	SA	
AHR38	2007-000965	R-CHIP;5.1Kohm,5%,1/10W,TP,1608	1	SA	
AHR39	2007-000109	R-CHIP;1Mohm,5%,1/10W,TP,1608	1	SA	
AHR40	2007-000087	R-CHIP;6.8Kohm,5%,1/10W,TP,1608	1	SA	
AHR41	2007-000087	R-CHIP;6.8Kohm,5%,1/10W,TP,1608	1	SA	
AHR42	2001-000539	R-CARBON;24KOHM,5%,1/8W,AA,TP,1.8X	1	SA	
AHR43	2007-001164	R-CHIP;75ohm,1%,1/10W,TP,1608	1	SA	
AHR44	2007-001164	R-CHIP;75ohm,1%,1/10W,TP,1608	1	SA	
AHR45	2007-001164	R-CHIP;75ohm,1%,1/10W,TP,1608	1	SA	
AHR46	2007-001164	R-CHIP;75ohm,1%,1/10W,TP,1608	1	SA	
AHR47	2007-001164	R-CHIP;75ohm,1%,1/10W,TP,1608	1	SA	
AHR50	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X	1	SA	
AHR51	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X	1	SA	
AHR52	2007-000109	R-CHIP;1Mohm,5%,1/10W,TP,1608	1	SA	
AHR53	2007-000102	R-CHIP;100Kohm,5%,1/10W,TP,1608	1	SA	
AHR54	2007-000077	R-CHIP;470ohm,5%,1/10W,TP,1608	1	SA	
AHR55	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
AHR56	2007-000097	R-CHIP;47Kohm,5%,1/10W,TP,1608	1	SA	
AHR57	2007-000097	R-CHIP;47Kohm,5%,1/10W,TP,1608	1	SA	
AHR9	2007-000123	R-CHIP;1.5Kohm,5%,1/10W,TP,1608	1	SA	

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
AIC1	1003-001561	IC-LED DRIVER;PT6961,SOP,32P,300MI	1	SA	
AJACK1	3722-002384	JACK-PIN;3P,SN/NI,YEL/WHT/RED,ANGL	1	SA	
AJACK3	3722-002383	JACK-IEEE1394;4P/1,AU,BLK,ANGLE,IE	1	SA	
AL1	2703-001973	INDUCTOR-SMD;2.7uH,10%,1608	1	SA	
AL2	2701-000181	INDUCTOR-AXIAL;33uH,5%,2434	1	SA	
AL3	2701-000181	INDUCTOR-AXIAL;33uH,5%,2434	1	SA	
AL4	2703-001973	INDUCTOR-SMD;2.7uH,10%,1608	1	SA	
AL5	2701-000002	INDUCTOR-AXIAL;100UH,10%,4298	1	SA	
AL6	2701-000002	INDUCTOR-AXIAL;100UH,10%,4298	1	SA	
AMC01	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
AME2	2401-001502	C-AL;47uF,20%,16V,GP,TP,6.3x5,2.5	1	SA	
AR1	2007-000092	R-CHIP;15Kohm,5%,1/10W,TP,1608	1	SA	
AR10	2007-000092	R-CHIP;15Kohm,5%,1/10W,TP,1608	1	SA	
AR11	2007-000092	R-CHIP;15Kohm,5%,1/10W,TP,1608	1	SA	
AR12	2007-000616	R-CHIP;24Kohm,5%,1/10W,TP,1608	1	SA	
AR13	2007-001167	R-CHIP;75ohm,5%,1/10W,TP,1608	1	SA	
AR14	2007-000616	R-CHIP;24Kohm,5%,1/10W,TP,1608	1	SA	
AR16	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
AR17	2007-000119	R-CHIP;560ohm,5%,1/10W,TP,1608	1	SA	
AR2	2007-001010	R-CHIP;51Kohm,5%,1/10W,TP,1608	1	SA	
AR3	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3	1	SA	
AR4	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
AR5	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3	1	SA	
AR6	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3	1	SA	
AR7	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
AR8	2007-000092	R-CHIP;15Kohm,5%,1/10W,TP,1608	1	SA	
AR9	2007-000092	R-CHIP;15Kohm,5%,1/10W,TP,1608	1	SA	
ARM1	0609-001225	MODULE REMOCON;VERTICAL,3.6mm,TR	1	SA	
ASW1	3404-001261	SWITCH-TACT;15V DC,20mA,100gf,7.4X	1	SA	
ASW11	3404-001261	SWITCH-TACT;15V DC,20mA,100gf,7.4X	1	SA	
ASW8	3404-001261	SWITCH-TACT;15V DC,20mA,100gf,7.4X	1	SA	
AVFD1	AK07-00034A	LED DISPLAY-OVAL TYPE;BCD-9032B,DV	1	SA	
AZD1	0406-001172	DIODE-TVS;CDS3C30GTH,48V,0W,SMD	1	SA	
AZD2	0406-001172	DIODE-TVS;CDS3C30GTH,48V,0W,SMD	1	SA	
AZD3	0403-001083	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200	1	SA	
AZD4	0406-001172	DIODE-TVS;CDS3C30GTH,48V,0W,SMD	1	SA	
AZD5	0406-001172	DIODE-TVS;CDS3C30GTH,48V,0W,SMD	1	SA	
AZD6	0406-001172	DIODE-TVS;CDS3C30GTH,48V,0W,SMD	1	SA	
AZD7	0406-001172	DIODE-TVS;CDS3C30GTH,48V,0W,SMD	1	SA	
AZD8	0406-001172	DIODE-TVS;CDS3C30GTH,48V,0W,SMD	1	SA	
BC1	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1	1	SA	
BC3	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1	1	SA	
BC4	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1	1	SA	
BC5	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1	1	SA	
BC6	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
BC7	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1	1	SA	
BD2	0402-000165	DIODE-RECTIFIER;1N5819,40V,1A,DO-4	1	SA	
BD3	0402-000127	DIODE-RECTIFIER;1N4002,100V,1A,DO-	1	SA	
BD4	0402-000165	DIODE-RECTIFIER;1N5819,40V,1A,DO-4	1	SA	
BD5	0402-000165	DIODE-RECTIFIER;1N5819,40V,1A,DO-4	1	SA	
BD6	0402-000165	DIODE-RECTIFIER;1N5819,40V,1A,DO-4	1	SA	
BD7	0403-001083	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200	1	SA	
BD9	0402-000127	DIODE-RECTIFIER;1N4002,100V,1A,DO-	1	SA	
BE3	2401-002165	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	1	SA	
BE4	2401-002165	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	1	SA	
BE5	2401-000471	C-AL;10uF,20%,50V,BP,TP,5x11,5mm	1	SA	
BE6	2401-001250	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	1	SA	
BE7	2401-001730	C-AL;10UF,20%,50V,GP,TP,5X11,5	1	SA	
BL1	2701-000002	INDUCTOR-AXIAL;100UH,10%,4298	1	SA	
BL4	2701-000002	INDUCTOR-AXIAL;100UH,10%,4298	1	SA	
BQ1	0501-000362	TR-SMALL SIGNAL;KSC2328A-Y,NPN,100	1	SA	
BR1	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
BR2	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
BR3	2001-000405	R-CARBON;180OHM,5%,1/8W,AA,TP,1.8X	1	SA	
FC1	2203-000646	C-CER,CHIP;0.024NF,5%,50V,C0G,TP,1	1	SA	
FC1S01	3602-000103	FUSE-CLIP;-,-,10mohm	1	SNA	
FC1S02	3602-000103	FUSE-CLIP;-,-,10mohm	1	SNA	
FC2	2203-000646	C-CER,CHIP;0.024NF,5%,50V,C0G,TP,1	1	SA	
FC3	2203-000626	C-CER,CHIP;0.022nF,5%,50V,C0G,1608	1	SA	
FC4	2203-000626	C-CER,CHIP;0.022nF,5%,50V,C0G,1608	1	SA	
FC5	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,1608	1	SA	
FC6	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,1608	1	SA	
FD1	0401-000005	DIODE-SWITCHING;1N4148,75V,150mA,D	1	SA	
FE2	2401-002259	C-AL;100000uF,+80-20%,5.5V,-,TP,12	1	SA	
FIC1	AK09-00101A	IC MICOM;N128-C05-3BA,DVD-R130E-01	1	SNA	
FIC2	1103-001224	IC-EEPROM;524L50X51,2Kx8,SOP,8P5.	1	SA	
FIC3	1203-000515	IC-VOL. DETECTOR;7042,TO-92,3P,177	1	SA	
FIC4	AC14-12006C	IC;KA7533,DIP,-	1	SA	
FL261	3809-001804	FFC CABLE-FLAT;30V,80C,55mm,13P,1m	1	SA	
FR1	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
FR10	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
FR11	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
FR12	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
FR13	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
FR14	2007-000100	R-CHIP;68Kohm,5%,1/10W,TP,1608	1	SA	
FR15	2007-000102	R-CHIP;100Kohm,5%,1/10W,TP,1608	1	SA	
FR17	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
FR19	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
FR2	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
FR20	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
FR5	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
FR6	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
FR7	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
FR8	2007-000071	R-CHIP;22ohm,5%,1/10W,TP,1608	1	SA	
FR9	2007-000102	R-CHIP;100Kohm,5%,1/10W,TP,1608	1	SA	
FRONT-	AK63-00307A	GROUND-FRONT AV;DVD-R130,SUS,T0.2,	1	SA	
FX1	2801-003139	CRYSTAL-UNIT;8MHz,50ppm,28-AAA,22p	1	SA	
FX2	2801-003318	CRYSTAL-UNIT;32.768KHz,20ppm,28-AA	1	SA	
IC216	1001-001368	IC-AV SWITCH;HA118827,-,QFP,56P,12	1	SA	
IC217	1201-000163	IC-OP AMP;4560,SOP,8P,173MIL,DUAL,	1	SA	
MC1	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
MC2	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
MC3	2203-000998	C-CER,CHIP;0.047nF,5%,50V,C0G,1608	1	SA	
MCN2	3711-005563	HEADER-BOARD TO BOARD;BOX,30P,2R,2	1	SA	
MCN3	3711-005563	HEADER-BOARD TO BOARD;BOX,30P,2R,2	1	SA	
MD1	0402-001533	DIODE-RECTIFIER;1N5408,1000V,3A,-,	1	SA	
ME5	2401-000249	C-AL;100uF,20%,10V,GP,TP,6.3x5,5	1	SA	
ML1	2007-000029	R-CHIP;0ohm,5%,1/8W,TP,2012	1	SA	
MR2	2007-001167	R-CHIP;75ohm,5%,1/10W,TP,1608	1	SA	
MR4	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	

This Document can not be used without Samsung's authorization

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
MR5	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
MR6	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
MR7	2007-001167	R-CHIP;75ohm,5%,1/10W,TP,1608	1	SA	
MR9	2007-001167	R-CHIP;75ohm,5%,1/10W,TP,1608	1	SA	
NC1	2203-000160	C-CER,CHIP;0.0015NF,0.25PF,50V,C0G	1	SA	
NC10	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,1608	1	SA	
NC11	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1	1	SA	
NC12	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1	1	SA	
NC13	2203-001656	C-CER,CHIP;0.47nF,5%,50V,NP0,1608	1	SA	
NC14	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1	1	SA	
NC15	2203-000998	C-CER,CHIP;0.047nF,5%,50V,C0G,1608	1	SA	
NC2	2203-000160	C-CER,CHIP;0.0015NF,0.25PF,50V,C0G	1	SA	
NC3	2203-001656	C-CER,CHIP;0.47nF,5%,50V,NP0,1608	1	SA	
NC4	2203-000140	C-CER,CHIP;1.5nF,10%,50V,X7R,1608	1	SA	
NC5	2203-000140	C-CER,CHIP;1.5nF,10%,50V,X7R,1608	1	SA	
NC6	2203-001656	C-CER,CHIP;0.47nF,5%,50V,NP0,1608	1	SA	
NC7	2203-001607	C-CER,CHIP;0.22nF,5%,50V,NP0,1608	1	SA	
NC8	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1	1	SA	
NC9	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,1608	1	SA	
ND2	0401-000005	DIODE-SWITCHING;1N4148,75V,150mA,D	1	SA	
NE1	2401-000414	C-AL;10uF,20%,16V,GP,TP,4x7,5	1	SA	
NE2	2401-000438	C-AL;10uF,20%,25V,GP,-.5x11,5	1	SA	
NE3	2401-000414	C-AL;10uF,20%,16V,GP,TP,4x7,5	1	SA	
NE4	2401-000438	C-AL;10uF,20%,25V,GP,-.5x11,5	1	SA	
NE5	2401-000414	C-AL;10uF,20%,16V,GP,TP,4x7,5	1	SA	
NE6	2401-001020	C-AL;3.3UF,20%,50V,GP,TP,4X7,5	1	SA	
NE7	2401-000414	C-AL;10uF,20%,16V,GP,TP,4x7,5	1	SA	
NIC1	1204-001765	IC-AUDIO PROCESSOR;MSP3417D(PQFP),	1	SA	
NL1	2701-000188	INDUCTOR-AXIAL;4.7uH,5%,2434	1	SA	
NL2	2701-000188	INDUCTOR-AXIAL;4.7uH,5%,2434	1	SA	
NL3	2701-000188	INDUCTOR-AXIAL;4.7uH,5%,2434	1	SA	
NR1	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3	1	SA	
NR10	2007-001134	R-CHIP;68ohm,5%,1/10W,TP,1608	1	SA	
NR11	2007-000113	R-CHIP;33ohm,5%,1/10W,TP,1608	1	SA	
NR2	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X	1	SA	
NR3	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X	1	SA	
NR4	2007-000129	R-CHIP;27Kohm,5%,1/10W,TP,1608	1	SA	
NR5	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X	1	SA	
NR6	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X	1	SA	
NX1	2801-004096	CRYSTAL-UNIT;18.432MHZ,20PPM,28-AA	1	SA	
PACT1	2301-001792	C-FILM,LEAD;150nF,20%,275V,BK,17.5	1	SA	
PACT2	2301-001792	C-FILM,LEAD;150nF,20%,275V,BK,17.5	1	SA	
PADT1	0402-001111	DIODE-RECTIFIER;1N5397GP,600V,1.5A	1	SA	
PADT2	0402-001111	DIODE-RECTIFIER;1N5397GP,600V,1.5A	1	SA	
PADT3	0402-001111	DIODE-RECTIFIER;1N5397GP,600V,1.5A	1	SA	
PADT4	0402-001111	DIODE-RECTIFIER;1N5397GP,600V,1.5A	1	SA	
PAFT1	3601-000237	FUSE-CARTRIDGE;250V,2A,SLOW-BLOW,C	1	SA	
PALT2	AC29-00002A	FILTER LINE NOISE;-,30mH,-,-,BLF-2	1	SA	
PALT4	AC29-00003A	FILTER LINE NOISE;-,20mH MIN,-,-,-	1	SA	
PART1	2007-008711	R-CHIP;1MOHM,5%,1/2W,TP,5025	1	SA	
PAVV1	1405-000186	VARISTOR;470V,2500A,17.5x7.5mm,TP	1	SA	
PAVV2	1405-001026	VARISTOR;470V,600A,9x7mm,TP	1	SA	
PAWT1	3711-000203	HEADER-BOARD TO CABLE;1WALL,2P/3P,	1	SA	
PBCU1	2201-002044	C-CERAMIC,DISC;0.1NF,10%,400V,Y5P,	1	SA	
PBCU2	2201-002044	C-CERAMIC,DISC;0.1NF,10%,400V,Y5P,	1	SA	
PBCU3	2201-000446	C-CERAMIC,DISC;3.3NF,20%,400V,Y5U,	1	SA	
PBCU4	2201-000446	C-CERAMIC,DISC;3.3NF,20%,400V,Y5U,	1	SA	
PBIZ1	0604-001028	PHOTO-COUPLER;TR,50-600%,250mW,DIP	1	SA	
PDCZ1	2301-001654	C-FILM,LEAD-PEF;1000nF,5%,100V,TP,	1	SA	
PFCF1	2301-000129	C-FILM,LEAD-PEF;100nF,5%,50V,TP,10	1	SA	
PFCZ1	2301-000402	C-FILM,LEAD-PEF;1nF,5%,50V,TP,5x7x	1	SA	
PFID1	AC14-12006D	IC;KA431Z,TO-92,TAPING	1	SA	
PFRF1	2001-000780	R-CARBON;470OHM,5%,1/8W,AA,TP,1.8X	1	SA	
PFRF2	2001-000221	R-CARBON;1.2KOHM,5%,1/8W,AA,TP,1.8	1	SA	
PFRF3	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3	1	SA	
PFRF4	2001-000674	R-CARBON;360OHM,5%,1/8W,AA,TP,1.8X	1	SA	
PFRF5	2004-000459	R-METAL;2.2Kohm,1%,1/8W,AA,TP,1.8x	1	SA	
PFRF6	2004-000459	R-METAL;2.2Kohm,1%,1/8W,AA,TP,1.8x	1	SA	
PFRZ1	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3	1	SA	
PLCZ1	2301-000129	C-FILM,LEAD-PEF;100nF,5%,50V,TP,10	1	SA	
PLRU1	1404-001361	THERMISTOR-NTC;3ohm,4A,-,35mW/C,-,	1	SA	
PLRZ1	2003-000105	R-METAL OXIDE;0.33ohm,5%,2W,AD,TP,	1	SA	
PPCD1	2401-003480	C-AL;1000UF,20%,10V,LZ,TP,10X16MM,	1	SA	
PPCD2	2401-001479	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,	1	SA	
PPCF1	2401-003480	C-AL;1000UF,20%,10V,LZ,TP,10X16MM,	1	SA	
PPCF10	2401-001370	C-AL;470uF,20%,16V,GP,TP,8x11.5,5	1	SA	
PPCF11	2401-003107	C-AL;47uF,20%,16V,GP,TP,5x7,5	1	SA	
PPCF2	2401-003480	C-AL;1000UF,20%,10V,LZ,TP,10X16MM,	1	SA	
PPCF3	2401-001370	C-AL;470uF,20%,16V,GP,TP,8x11.5,5	1	SA	
PPCF4	2401-001250	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	1	SA	
PPCF5	2401-001250	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	1	SA	
PPCF7	2401-001370	C-AL;470uF,20%,16V,GP,TP,8x11.5,5	1	SA	
PPCF8	2401-002165	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	1	SA	
PPCI1	2401-001126	C-AL;330uF,20%,25V,WT,TP,10x12.5,5	1	SA	
PPCI2	2401-001126	C-AL;330uF,20%,25V,WT,TP,10x12.5,5	1	SA	
PPCI3	2401-001126	C-AL;330uF,20%,25V,WT,TP,10x12.5,5	1	SA	
PPCI8	2401-001126	C-AL;330uF,20%,25V,WT,TP,10x12.5,5	1	SA	
PPCO1	2401-000385	C-AL;10uF,20%,100V,GP,TP,6.3x11,5	1	SC	
PPCO2	2401-002300	C-AL;47uF,20%,50V,GP,TP,6.3x11,5	1	SA	
PPDD1	0404-001235	DIODE-SCHOTTKY;SHK65-45R,60V,3000m	1	SA	
PPDF1	0404-001235	DIODE-SCHOTTKY;SHK65-45R,60V,3000m	1	SA	
PPDF2	0404-001235	DIODE-SCHOTTKY;SHK65-45R,60V,3000m	1	SA	
PPDF3	0402-001533	DIODE-RECTIFIER;1N5408,1000V,3A,-,	1	SA	
PPDF5	0401-000005	DIODE-SWITCHING;1N4148,75V,150mA,D	1	SA	
PPDI1	0402-001624	DIODE-RECTIFIER;SF26,400V,2A,DO-15	1	SA	
PPDO1	0402-000012	DIODE-RECTIFIER;UF4007,1KV,1A,DO-4	1	SA	
PPID1	1203-001586	IC-POSI.FIXED REG.;278R33,TO-220F,	1	SA	
PPIF1	1203-001589	IC-POSI.FIXED REG.;278R05,TO-220F,	1	SA	
PPIF2	1203-001589	IC-POSI.FIXED REG.;278R05,TO-220F,	1	SA	
PPII1	1203-002183	IC-SWITCH VOL. REG.;278R12,TO-220F	1	SA	
PPII4	1203-002183	IC-SWITCH VOL. REG.;278R12,TO-220F	1	SA	
PPLD1	AC27-12001N	COIL CHOKE;10UH-15%,RA,K-30,Q80,15	1	SA	
PPLF1	AH27-00039A	COIL CHOKE;DR CHOKE(8*6),DVD-R2000	1	SA	
PPLI1	AC27-12001N	COIL CHOKE;10UH-15%,RA,K-30,Q80,15	1	SA	
PPRD1	2003-000485	R-METAL OXIDE(S);12KOHM,5%,1W,AA,T	1	SA	
PPRF2	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3	1	SA	
PPRF3	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3	1	SA	
PPRF4	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3	1	SA	
PPRF5	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X	1	SA	
PPRF6	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3	1	SA	

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
PPRF8	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3	1	SA	
PPRI1	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA	
PPRO1	2001-000062	R-CARBON;470OHM,5%,1/4W,AA,TP,2.4X	1	SA	
PPZO1	0403-000390	DIODE-ZENER;UZP33B,31.4-34.6V,1000	1	SA	
PQIZ1	1203-003883	IC-PWM CONTROLLER;3B2065P-2,TO-220	1	SA	
PQIZ1A	AH62-30122A	HEAT SINK-POWER;1,AL,VO,T1.3,ANODI	1	SNA	
PQTZ1	AC26-00014K	TRANS SWITCHING-RAM RECORDER;EER35	1	SA	
PRCU1	2401-004015	C-AL;220uF,?20%,450V,-,BK,30*30,10	1	SA	
PSCX1	2305-001029	C-FILM,LEAD-PEF;10nF,10%,630V,TP,1	1	SA	
PSCZ2	2201-000129	C-CERAMIC,DISC;0.1nF,10%,1000V,Y5P	1	SA	
PSDZ1	0402-000012	DIODE-RECTIFIER;UF4007,1KV,1A,DO-4	1	SA	
PSRZ1	2006-000273	R-CEMENT;27KOHM,5%,2W,CA,BK,6.4X6.	1	SA	
PSRZ2	2006-000273	R-CEMENT;27KOHM,5%,2W,CA,BK,6.4X6.	1	SA	
PVCL1	2401-002608	C-AL;33uF,20%,35V,GP,TP,5x11,5	1	SA	
PVDL1	0402-001195	DIODE-RECTIFIER;F1T4,400V,1A,DO-20	1	SA	
PVRL4	2001-000793	R-CARBON;47OHM,5%,1/8W,AA,TP,1.8X3	1	SA	
PVZL1	0403-000713	DIODE-ZENER;MTZJ20B,18.63-17.7V,50	1	SA	
PZWZ1	3711-004379	HEADER-BOARD TO CABLE;BOX,4P,1R,2m	1	SA	
SC10	2203-000491	C-CER,CHIP;2.2nF,10%,50V,X7R,1608	1	SA	
SC12	2203-000491	C-CER,CHIP;2.2nF,10%,50V,X7R,1608	1	SA	
SC13	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
SC14	2203-000491	C-CER,CHIP;2.2nF,10%,50V,X7R,1608	1	SA	
SC15	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
SC16	2203-000236	C-CER,CHIP;0.1nF,5%,50V,C0G,1608	1	SA	
SC18	2203-000236	C-CER,CHIP;0.1nF,5%,50V,C0G,1608	1	SA	
SC2	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
SC21	2203-000236	C-CER,CHIP;0.1nF,5%,50V,C0G,1608	1	SA	
SC22	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,1608	1	SA	
SC23	2203-000236	C-CER,CHIP;0.1nF,5%,50V,C0G,1608	1	SA	
SC25	2203-000236	C-CER,CHIP;0.1nF,5%,50V,C0G,1608	1	SA	
SC26	2203-001607	C-CER,CHIP;0.22nF,5%,50V,NP0,1608	1	SA	
SC27	2203-000236	C-CER,CHIP;0.1nF,5%,50V,C0G,1608	1	SA	
SC28	2203-001607	C-CER,CHIP;0.22nF,5%,50V,NP0,1608	1	SA	
SC29	2203-000236	C-CER,CHIP;0.1nF,5%,50V,C0G,1608	1	SA	
SC3	2203-000236	C-CER,CHIP;0.1nF,5%,50V,C0G,1608	1	SA	
SC30	2203-001607	C-CER,CHIP;0.22nF,5%,50V,NP0,1608	1	SA	
SC31	2203-000236	C-CER,CHIP;0.1nF,5%,50V,C0G,1608	1	SA	
SC33	2203-000236	C-CER,CHIP;0.1nF,5%,50V,C0G,1608	1	SA	
SC35	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1	1	SA	
SC36	2203-000236	C-CER,CHIP;0.1nF,5%,50V,C0G,1608	1	SA	
SC37	2203-000236	C-CER,CHIP;0.1nF,5%,50V,C0G,1608	1	SA	
SC38	2203-000236	C-CER,CHIP;0.1nF,5%,50V,C0G,1608	1	SA	
SC5	2203-000236	C-CER,CHIP;0.1nF,5%,50V,C0G,1608	1	SA	
SC6	2203-000236	C-CER,CHIP;0.1nF,5%,50V,C0G,1608	1	SA	
SC7	2203-000236	C-CER,CHIP;0.1nF,5%,50V,C0G,1608	1	SA	
SC8	2203-000236	C-CER,CHIP;0.1nF,5%,50V,C0G,1608	1	SA	
SC9	2203-000491	C-CER,CHIP;2.2nF,10%,50V,X7R,1608	1	SA	
SD1	0401-000005	DIODE-SWITCHING;1N4148,75V,150mA,D	1	SA	
SD4	0407-000123	DIODE-ARRAY;DAN202K,80V,100mA,CA2-	1	SA	
SD5	0407-000123	DIODE-ARRAY;DAN202K,80V,100mA,CA2-	1	SA	
SE1	2401-001479	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,	1	SA	
SE10	2401-002165	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	1	SA	
SE11	2401-001479	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,	1	SA	
SE13	2401-002165	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	1	SA	
SE3	2401-001479	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,	1	SA	
SE4	2401-001479	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,	1	SA	
SE6	2401-001479	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,	1	SA	
SIC2	1204-001748	IC-SELECTOR;MM1503XN,SOP,6P,63MIL,	1	SA	
SJACK1	3722-002409	JACK-SCART;42P,SN,BLK	1	SA	
SJACK3	3707-001060	CONNECTOR-OPTICAL;PLUG,GP1FA550TZ,	1	SA	
SJACK4	3722-002318	JACK-PIN;3P(7P),SN/NI,RED/BLU/GRN,	1	SA	
SJACK5	3722-002111	JACK-PIN;6P+1P,SN/NI,RED/WHT/YEL/B	1	SA	
SL1	2701-000181	INDUCTOR-AXIAL;33uH,5%,2434	1	SA	
SL10	2701-000181	INDUCTOR-AXIAL;33uH,5%,2434	1	SA	
SL12	2701-000181	INDUCTOR-AXIAL;33uH,5%,2434	1	SA	
SL13	AC27-92001M	COIL-INDUCTOR;RH3.5X6.5RS,BEAD(RAD	1	SC	
SL14	2701-000117	INDUCTOR-AXIAL;10uH,5%,2434	1	SA	
SL15	2701-000181	INDUCTOR-AXIAL;33uH,5%,2434	1	SA	
SL16	2701-000181	INDUCTOR-AXIAL;33uH,5%,2434	1	SA	
SL17	2701-000181	INDUCTOR-AXIAL;33uH,5%,2434	1	SA	
SL18	AC27-92001M	COIL-INDUCTOR;RH3.5X6.5RS,BEAD(RAD	1	SC	
SL19	AC27-92001M	COIL-INDUCTOR;RH3.5X6.5RS,BEAD(RAD	1	SC	
SL2	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70M	1	SA	
SL3	2701-000181	INDUCTOR-AXIAL;33uH,5%,2434	1	SA	
SL4	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70M	1	SA	
SL5	2701-000181	INDUCTOR-AXIAL;33uH,5%,2434	1	SA	
SL6	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70M	1	SA	
SL7	3301-000314	BEAD-SMD;120ohm,1.6x0.8x0.8mm,-,-,	1	SA	
SL8	3301-000314	BEAD-SMD;120ohm,1.6x0.8x0.8mm,-,-,	1	SA	
SQ1	0501-000341	TR-SMALL SIGNAL;KSC1623-L,NPN,200m	1	SA	
SQ10	0501-000341	TR-SMALL SIGNAL;KSC1623-L,NPN,200m	1	SA	
SQ11	0504-000156	TR-DIGITAL;KSR2103,PNP,200MW,22K/2	1	SA	
SQ12	0504-000156	TR-DIGITAL;KSR2103,PNP,200MW,22K/2	1	SA	
SQ2	0504-000129	TR-DIGITAL;KSR1104,NPN,200mW,47K/4	1	SA	
SQ3	0504-000152	TR-DIGITAL;KSR2101,PNP,200mW,4.7K/	1	SA	
SQ4	0504-000129	TR-DIGITAL;KSR1104,NPN,200mW,47K/4	1	SA	
SQ5	0504-000152	TR-DIGITAL;KSR2101,PNP,200mW,4.7K/	1	SA	
SQ6	0504-000129	TR-DIGITAL;KSR1104,NPN,200mW,47K/4	1	SA	
SQ7	0501-000398	TR-SMALL SIGNAL;KSC945-Y,NPN,250mW	1	SA	
SQ8	0501-000398	TR-SMALL SIGNAL;KSC945-Y,NPN,250mW	1	SA	
SQ9	0501-000341	TR-SMALL SIGNAL;KSC1623-L,NPN,200m	1	SA	
SR1	2007-000115	R-CHIP;82ohm,5%,1/10W,TP,1608	1	SA	
SR10	2007-000102	R-CHIP;100Kohm,5%,1/10W,TP,1608	1	SA	
SR12	2001-000969	R-CARBON;75OHM,5%,1/8W,AA,TP,1.8X3	1	SA	
SR13	2007-000102	R-CHIP;100Kohm,5%,1/10W,TP,1608	1	SA	
SR14	2007-001167	R-CHIP;75ohm,5%,1/10W,TP,1608	1	SA	
SR15	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
SR16	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA	
SR17	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
SR18	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
SR19	2007-001167	R-CHIP;75ohm,5%,1/10W,TP,1608	1	SA	
SR20	2007-001167	R-CHIP;75ohm,5%,1/10W,TP,1608	1	SA	
SR21	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
SR23	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
SR24	2007-001167	R-CHIP;75ohm,5%,1/10W,TP,1608	1	SA	
SR25	2007-000134	R-CHIP;33Kohm,5%,1/10W,TP,1608	1	SA	
SR27	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
SR28	2007-001167	R-CHIP;75ohm,5%,1/10W,TP,1608	1	SA	
SR3	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
SR30	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	

This Document can not be used without Samsung's authorization

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
SR31	2001-000969	R-CARBON;75OHM,5%,1/8W,AA,TP,1.8X3	1	SA	
SR32	2007-000094	R-CHIP;22Kohm,5%,1/10W,TP,1608	1	SA	
SR35	2007-000267	R-CHIP;1.8Kohm,5%,1/8W,TP,2012	1	SC	
SR37	2007-000267	R-CHIP;1.8Kohm,5%,1/8W,TP,2012	1	SC	
SR39	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
SR4	2007-001167	R-CHIP;75ohm,5%,1/10W,TP,1608	1	SA	
SR40	2007-001167	R-CHIP;75ohm,5%,1/10W,TP,1608	1	SA	
SR41	2007-001167	R-CHIP;75ohm,5%,1/10W,TP,1608	1	SA	
SR42	2007-001167	R-CHIP;75ohm,5%,1/10W,TP,1608	1	SA	
SR44	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
SR46	2007-000119	R-CHIP;560ohm,5%,1/10W,TP,1608	1	SA	
SR47	2007-000119	R-CHIP;560ohm,5%,1/10W,TP,1608	1	SA	
SR48	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
SR51	2007-000040	R-CHIP;150ohm,1%,1/10W,TP,1608	1	SA	
SR52	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA	
SR53	2007-000075	R-CHIP;220ohm,5%,1/10W,TP,1608	1	SA	
SR55	2007-000075	R-CHIP;220ohm,5%,1/10W,TP,1608	1	SA	
SR56	2007-000075	R-CHIP;220ohm,5%,1/10W,TP,1608	1	SA	
SR58	2007-000075	R-CHIP;220ohm,5%,1/10W,TP,1608	1	SA	
SR59	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
SR6	2007-000119	R-CHIP;560ohm,5%,1/10W,TP,1608	1	SA	
SR60	2007-000075	R-CHIP;220ohm,5%,1/10W,TP,1608	1	SA	
SR61	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
SR62	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
SR65	2007-000119	R-CHIP;560ohm,5%,1/10W,TP,1608	1	SA	
SR66	2007-000119	R-CHIP;560ohm,5%,1/10W,TP,1608	1	SA	
SR67	2007-000122	R-CHIP;1.2Kohm,5%,1/10W,TP,1608	1	SA	
SR68	2007-000122	R-CHIP;1.2Kohm,5%,1/10W,TP,1608	1	SA	
SR69	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
SR7	2007-001167	R-CHIP;75ohm,5%,1/10W,TP,1608	1	SA	
SR70	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
SR71	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
SR8	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
SR9	2007-001167	R-CHIP;75ohm,5%,1/10W,TP,1608	1	SA	
SZD1	0406-001172	DIODE-TVS;CDS3C30GTH,48V,0W,SMD	1	SA	
SZD10	0406-001172	DIODE-TVS;CDS3C30GTH,48V,0W,SMD	1	SA	
SZD11	0403-001083	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200	1	SA	
SZD12	0406-001172	DIODE-TVS;CDS3C30GTH,48V,0W,SMD	1	SA	
SZD13	0406-001172	DIODE-TVS;CDS3C30GTH,48V,0W,SMD	1	SA	
SZD14	0406-001172	DIODE-TVS;CDS3C30GTH,48V,0W,SMD	1	SA	
SZD16	0403-000361	DIODE-ZENER;UZ6.2BSB,5.96-6.27V,50	1	SA	
SZD2	0406-001172	DIODE-TVS;CDS3C30GTH,48V,0W,SMD	1	SA	
SZD3	0406-001172	DIODE-TVS;CDS3C30GTH,48V,0W,SMD	1	SA	
SZD4	0406-001172	DIODE-TVS;CDS3C30GTH,48V,0W,SMD	1	SA	
SZD5	0406-001172	DIODE-TVS;CDS3C30GTH,48V,0W,SMD	1	SA	
SZD6	0406-001172	DIODE-TVS;CDS3C30GTH,48V,0W,SMD	1	SA	
SZD7	0406-001172	DIODE-TVS;CDS3C30GTH,48V,0W,SMD	1	SA	
SZD8	0406-001172	DIODE-TVS;CDS3C30GTH,48V,0W,SMD	1	SA	
SZD9	0406-001172	DIODE-TVS;CDS3C30GTH,48V,0W,SMD	1	SA	
TC1	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1	1	SA	
TC2	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1	1	SA	
TC4	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1	1	SA	
TC5	2203-000998	C-CER,CHIP;0.047nF,5%,50V,C0G,1608	1	SA	
TD1	0401-000005	DIODE-SWITCHING;1N4148,75V,150mA,D	1	SA	
TE1	2401-002300	C-AL;47uF,20%,50V,GP,TP,6.3x11,5	1	SA	
TE2	2401-001479	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,	1	SA	
TE3	2401-001077	C-AL;330nF,20%,50V,GP,TP,4x7mm,5mm	1	SA	
TE4	2401-001479	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,	1	SA	
TL1	2701-000002	INDUCTOR-AXIAL;100UH,10%,4298	1	SA	
TR1	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
TR2	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA	
TR4	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA	
TR5	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X	1	SA	
TR6	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X	1	SA	
TTM1	AK40-00025A	TM BLOCK;TCSK0601PD25A,PAL B/G,I,D	1	SA	
W004	6003-000283	SCREW-TAPTITE;BH,+,B,M3,L8,ZPC(YEL	1	SA	
WJ134	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
WJ176	2007-000033	R-CHIP;0ohm,5%,1/4W,TP,3216	1	SA	
WJ192	2007-000033	R-CHIP;0ohm,5%,1/4W,TP,3216	1	SA	
WJ193	2007-000033	R-CHIP;0ohm,5%,1/4W,TP,3216	1	SA	
WJ217	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
WJ225	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
WJ230	2007-000033	R-CHIP;0ohm,5%,1/4W,TP,3216	1	SA	
WJ243	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
WJ244	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
WJ71	2007-000033	R-CHIP;0ohm,5%,1/4W,TP,3216	1	SA	
WJ90	2007-000033	R-CHIP;0ohm,5%,1/4W,TP,3216	1	SA	
H001	**AK97-01553E**	**ASSY-LOADER;,-,SV-R3600,LOADER ASS**	**1**	**SA**	
C012	AK61-00475A	SPRING ETC;SOH-DDR,SUS,-,-,-,L6.8,	1	SNA	
C771	AK61-00390A	HOLDER-WIRE;SOH-DR2,PPS,T5.2,W14.1	1	SNA	
CIC1	1203-003177	IC-VOL. DETECTOR;BD5326G,SSOP,5P,2	1	SA	
CN1	3708-002193	CONNECTOR-FPC/FFC/PIC;50P,0.5mm,SM	1	SA	
DECK_C	3708-002176	CONNECTOR-FPC/FFC/PIC;5P,1mm,SMD-A	1	SA	
H001	AK97-01324A	ASSY-RECORDER DECK;-,DP-RW2,-	1	SNA	
H103	AK66-00042A	GEAR-PULLEY;DP-15,POM,-,-,-,WHT,-,	1	SA	
H104	AK97-00608A	ASSY-MOTOR LOAD;-,DP-15,-	1	SA	
H105	6602-001076	BELT-RECTANGULAR;CR,T1.2,4.3%,1.2X	1	SA	
H106	AK66-00041A	GEAR-TRAY;DP-15,POM,-,-,-,WHT,-,-,	1	SA	
H107	AK66-00071A	SLIDER-HOUSING;DP-RW2,POM,T17,W17.	1	SNA	
H108	AK63-00276A	TRAY-DISC;DP-RW2,ABS,T1.5,W124,L18	1	SNA	
H202	AK73-00038A	RUBBER-INSULATOR;DP-R3L,Butyl,8.9*	4	SNA	
H207	AK31-00028A	MOTOR SPINDLE;DP-R3L,8500,9.8mN.m,	1	SNA	
H209	AK64-01335A	CHASSIS-SUB;DP-RW2,ABS,T1.5,W60.9,	1	SNA	
H211	AK97-01360A	ASSY-PICK UP;ZN,SOH-DR3,-	1	SNA	
H212	AK61-00484A	HOLDER-CHUCK;DP-RW2,ABS,T3,W141,L9	1	SNA	
H213	AK97-01330A	ASSY-PCB MOTOR;ASSY,DP-RW2,ASSY	1	SNA	
H241	AK41-00399A	FFC-PU;DP-RW2,PITCH : 0.5,UL2896,5	1	SNA	
H265	AK61-00489A	BRACKET-SHAFT PU;DP-RW2,SUS-301CSP	2	SNA	
H268	AK61-00452A	SPRING ETC-HINGE PU;DP-R2,SUS304WP	1	SNA	
H271	AK61-00491A	HINGE-PU;DP-RW2,POM KEPITAL TX-31,	1	SNA	
H275	AK66-00072A	SHAFT-PU;DP-RW2,SUS420J2,91.5,3,NA	2	SNA	
H401	AK61-00485B	FRAME-MAIN;DP-R3,ABS,ABS,-,BLK,-,W	1	SNA	
JP9	3708-001331	CONNECTOR-FPC/FFC/PIC;40P,0.5mm,SM	1	SA	
PC1	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
PC10	2402-000179	C-AL,SMD;47uF,20%,16V,GP,TP,6.6x6.	1	SA	
PC12	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
PC14	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
PC15	2404-001131	C-TA,CHIP;22UF,10%,10V,GP,TP,3528	1	SA	

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
PC2	2203-006214	C-CER,CHIP;2200nF,10%,25V,X7R,3216	1	SA	
PC3	2402-001042	C-AL,SMD;100uF,20%,16V,GP,TP,6.6x6	1	SA	
PC4	2203-005061	C-CER,CHIP;100nF,+80-20%,16V,Y5V,1	1	SA	
PC5	2402-001042	C-AL,SMD;100uF,20%,16V,GP,TP,6.6x6	1	SA	
PC6	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
PC7	2203-005171	C-CER,CHIP;1000nF,10%,16V,X7R,2012	1	SA	
PC8	2203-005171	C-CER,CHIP;1000nF,10%,16V,X7R,2012	1	SA	
PC9	2402-000179	C-AL,SMD;47uF,20%,16V,GP,TP,6.6x6.	1	SA	
PCB	AK41-00476A	PCB-FONT;RAMBO3,EPOXY,2,-,1.3T,132	0.5	SNA	
PCN	3711-005477	HEADER-BOARD TO CABLE;BOX,4P,1R,2m	1	SA	
PIC2	1203-003997	IC-MULTI REG.;BA30E00WHFP,HRP,7P,9	1	SA	
PIC3	1203-003999	IC-POSI.FIXED REG.;BH25FB1WHFV,HVS	1	SA	
PL1	2901-001281	FILTER-EMI SMD;16V,2A,-,220000pF,2	1	SA	
PL3	2901-001281	FILTER-EMI SMD;16V,2A,-,220000pF,2	1	SA	
PL4	2901-001281	FILTER-EMI SMD;16V,2A,-,220000pF,2	1	SA	
PL5	2901-001281	FILTER-EMI SMD;16V,2A,-,220000pF,2	1	SA	
PR1	2007-000097	R-CHIP;47Kohm,5%,1/10W,TP,1608	1	SA	
PR2	2007-000616	R-CHIP;24Kohm,5%,1/10W,TP,1608	1	SA	
RC10	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
RC13	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
RC14	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
RC15	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
RC16	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
RC17	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
RC19	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
RC21	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
RC22	2404-001020	C-TA,CHIP;10uF,20%,10V,GP,TP,3216	1	SA	
RC23	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
RC25	2404-001020	C-TA,CHIP;10uF,20%,10V,GP,TP,3216	1	SA	
RC26	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
RC27	2404-001020	C-TA,CHIP;10uF,20%,10V,GP,TP,3216	1	SA	
RC28	2203-000254	C-CER,CHIP;10nF,10%,16V,X7R,1005	1	SA	
RC29	2203-000254	C-CER,CHIP;10nF,10%,16V,X7R,1005	1	SA	
RC3	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
RC30	2203-000254	C-CER,CHIP;10nF,10%,16V,X7R,1005	1	SA	
RC31	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
RC32	2203-000233	C-CER,CHIP;0.1nF,5%,50V,C0G,1005	1	SA	
RC33	2203-000254	C-CER,CHIP;10nF,10%,16V,X7R,1005	1	SA	
RC34	2203-000254	C-CER,CHIP;10nF,10%,16V,X7R,1005	1	SA	
RC35	2203-000254	C-CER,CHIP;10nF,10%,16V,X7R,1005	1	SA	
RC36	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
RC37	2404-000284	C-TA,CHIP;10uF,20%,16V,-,TP,3528	1	SA	
RC38	2203-000254	C-CER,CHIP;10nF,10%,16V,X7R,1005	1	SA	
RC39	2404-000284	C-TA,CHIP;10uF,20%,16V,-,TP,3528	1	SA	
RC40	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
RC41	2203-000254	C-CER,CHIP;10nF,10%,16V,X7R,1005	1	SA	
RC42	2203-000254	C-CER,CHIP;10nF,10%,16V,X7R,1005	1	SA	
RC43	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
RC44	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
RC45	2203-000438	C-CER,CHIP;1nF,10%,50V,X7R,1005	1	SA	
RC46	2203-000438	C-CER,CHIP;1nF,10%,50V,X7R,1005	1	SA	
RC47	2203-000627	C-CER,CHIP;0.022nF,5%,50V,C0G,1005	1	SA	
RC48	2203-000438	C-CER,CHIP;1nF,10%,50V,X7R,1005	1	SA	
RC49	2203-000438	C-CER,CHIP;1nF,10%,50V,X7R,1005	1	SA	
RC50	2203-000254	C-CER,CHIP;10nF,10%,16V,X7R,1005	1	SA	
RC51	2203-000254	C-CER,CHIP;10nF,10%,16V,X7R,1005	1	SA	
RC52	2203-000254	C-CER,CHIP;10nF,10%,16V,X7R,1005	1	SA	
RC53	2203-000233	C-CER,CHIP;0.1nF,5%,50V,C0G,1005	1	SA	
RC54	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
RC55	2404-000284	C-TA,CHIP;10uF,20%,16V,-,TP,3528	1	SA	
RC56	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
RC57	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
RC58	2404-000284	C-TA,CHIP;10uF,20%,16V,-,TP,3528	1	SA	
RC59	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
RC6	2203-005496	C-CER,CHIP;220nF,+80-20%,10V,Y5V,1	1	SA	
RC60	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
RC61	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
RC62	2203-005642	C-CER,CHIP;0.22nF,5%,50V,NP0,1005	1	SA	
RC63	2203-005642	C-CER,CHIP;0.22nF,5%,50V,NP0,1005	1	SA	
RC64	2203-005642	C-CER,CHIP;0.22nF,5%,50V,NP0,1005	1	SA	
RC65	2203-005642	C-CER,CHIP;0.22nF,5%,50V,NP0,1005	1	SA	
RC66	2203-000254	C-CER,CHIP;10nF,10%,16V,X7R,1005	1	SA	
RC67	2203-000254	C-CER,CHIP;10nF,10%,16V,X7R,1005	1	SA	
RC68	2203-000254	C-CER,CHIP;10nF,10%,16V,X7R,1005	1	SA	
RC69	2203-000233	C-CER,CHIP;0.1nF,5%,50V,C0G,1005	1	SA	
RC7	2203-005496	C-CER,CHIP;220nF,+80-20%,10V,Y5V,1	1	SA	
RC70	2203-001239	C-CER,CHIP;0.082nF,5%,50V,NP0,1005	1	SA	
RC71	2203-001239	C-CER,CHIP;0.082nF,5%,50V,NP0,1005	1	SA	
RC72	2203-000254	C-CER,CHIP;10nF,10%,16V,X7R,1005	1	SA	
RC73	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
RC74	2203-000489	C-CER,CHIP;2.2nF,10%,50V,X7R,1005	1	SA	
RIC2	AK13-00028A	IC ASIC;S1L1101X01,-,128,5V,-0 ~ +	1	SNA	
RR10	2007-000151	R-CHIP;15Kohm,5%,1/16W,TP,1005	1	SA	
RR11	2007-000143	R-CHIP;4.7Kohm,5%,1/16W,TP,1005	1	SA	
RR13	2007-000171	R-CHIP;0ohm,5%,1/16W,TP,1005	1	SA	
RR16	2007-000159	R-CHIP;56Kohm,5%,1/16W,TP,1005	1	SA	
RR17	2007-003009	R-CHIP;16Kohm,5%,1/16W,TP,1005	1	SA	
RR18	2007-000157	R-CHIP;47Kohm,5%,1/16W,TP,1005	1	SA	
RR21	2007-007107	R-CHIP;100Kohm,1%,1/16W,TP,1005	1	SA	
RR22	2007-007107	R-CHIP;100Kohm,1%,1/16W,TP,1005	1	SA	
RR24	2007-000145	R-CHIP;6.2Kohm,5%,1/16W,TP,1005	1	SA	
RR25	2007-000154	R-CHIP;24KOHM,5%,1/16W,TP,1005	1	SA	
RR26	2007-001320	R-CHIP;1.8Kohm,5%,1/16W,TP,1005	1	SA	
RR27	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	
RR28	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	
RR29	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	
RR30	2007-000157	R-CHIP;47Kohm,5%,1/16W,TP,1005	1	SA	
RR32	2007-000159	R-CHIP;56Kohm,5%,1/16W,TP,1005	1	SA	
RR33	2007-000154	R-CHIP;24KOHM,5%,1/16W,TP,1005	1	SA	
RR35	2007-000140	R-CHIP;1Kohm,5%,1/16W,TP,1005	1	SA	
RR37	2007-000170	R-CHIP;1Mohm,5%,1/16W,TP,1005	1	SA	
RR40	2007-000171	R-CHIP;0ohm,5%,1/16W,TP,1005	1	SA	
RR41	2007-000171	R-CHIP;0ohm,5%,1/16W,TP,1005	1	SA	
RR43	2007-000171	R-CHIP;0ohm,5%,1/16W,TP,1005	1	SA	
RR44	2007-000151	R-CHIP;15Kohm,5%,1/16W,TP,1005	1	SA	
RR45	2007-000151	R-CHIP;15Kohm,5%,1/16W,TP,1005	1	SA	
RR46	2007-000171	R-CHIP;0ohm,5%,1/16W,TP,1005	1	SA	
S.N.A	AK92-00876A	ASSY PCB-F/END;SV-R3600,F/END ASSY	1	SNA	
S.N.A	AH31-00025A	MOTOR-LOADING;RF-300EA-1D390,DP-7,	1	SNA	

This Document can not be used without Samsung's authorization

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
S.N.A	AK66-00006A	PULLEY MOTOR;DP-9,POM ,-,BLK,-,-,-	1	SNA	
S.N.A	0201-000169	ADHESIVE-CYA;ARCN-A501F,NTR	0.01	SNA	
S.N.A	0201-001411	ADHESIVE-UV;8833,YEL,50000,250G/1B	0.01	SNA	
S.N.A	0201-001525	ADHESIVE-UV;8840L,YEL,TRANS,23000,	0.05	SNA	
S.N.A	0201-001819	ADHESIVE-UV;8833M,YELLOW,21000mPas	0.08	SNA	
S.N.A	0202-001214	SOLDER-WIRE FLUX;HI-ALMIT HR19M LF	0.2	SNA	
S.N.A	AK97-01362A	ASSY-SUB PICK UP;ZN,SOH-DR3,-	1	SNA	
S.N.A	0201-001553	ADHESIVE-TP;G-800-A,GRY,220?40Pa.S	0.013	SNA	
S.N.A	0201-001718	ADHESIVE-A.C.F;A-80T,SILVER,11000-	0.003	SNA	
S.N.A	0202-001214	SOLDER-WIRE FLUX;HI-ALMIT HR19M LF	0.5	SNA	
S.N.A	AK97-01358A	ASSY-FPCB;-,SOH-DR2.5,RAMBO2.5 FPC	1	SNA	
S.N.A	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
S.N.A	2007-000076	R-CHIP;330ohm,5%,1/10W,TP,1608	1	SA	
S.N.A	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
S.N.A	2007-000309	R-CHIP;10ohm,5%,1/10W,TP,1608	1	SA	
S.N.A	2007-000869	R-CHIP;4.7Kohm,1%,1/10W,TP,1608	1	SA	
S.N.A	2007-000929	R-CHIP;470ohm,1%,1/10W,TP,1608	1	SA	
S.N.A	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1	8	SA	
S.N.A	2203-000626	C-CER,CHIP;0.022nF,5%,50V,C0G,1608	1	SA	
S.N.A	2203-005664	C-CER,CHIP;4700nF,10%,6.3V,X5R,201	1	SA	
S.N.A	1003-001854	IC-DIODE DRIVER;EL6939CLZ,LPP,32P,	1	SA	
S.N.A	2011-001261	R-NET;33ohm,5%,1/16W,L,CHIP,8P,TP,	1	SA	
S.N.A	2011-001344	R-NET;100ohm,5%,1/16W,L,CHIP,8P,TP	1	SA	
S.N.A	2104-001087	VR-SMD;2.2Kohm,25%,0.15W,TOP	2	SA	
S.N.A	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70M	1	SA	
S.N.A	AK41-00422A	FPC-FPCB-MAIN;SOH-DR2.5,00,POLYAMI	1	SNA	
S.N.A	0201-000172	ADHESIVE-AA;EP-171,BRN	0.01	SNA	
S.N.A	0202-001221	SOLDER-CREAM;PF305-116HO(A),-,25~4	0.12	SNA	
S.N.A	0603-001181	PHOTO DIODE;5.5V,658.79nm,-	1	SA	
S.N.A	0603-001187	PHOTO-RECEIVER;6.0V,17.0mA,650nm,M	1	SNA	
S.N.A	1404-001328	THERMISTOR-NTC;10Kohm,-,3370K,-,-,	1	SNA	
S.N.A	3708-002193	CONNECTOR-FPC/FFC/PIC;50P,0.5mm,SM	1	SA	
S.N.A	AK32-00004A	SENSOR PHOTO;CNB1001,-25~85,-,-,20	1	SNA	
S.N.A	AK61-00548A	PLATE-PD;SOH-DR3.5,Zn,T1.3,-,L11.5	1	SNA	
S.N.A	AK67-00053A	LENS-CDL;SOH-DR3,ZEONEX,CLEAR,4.2X	1	SNA	
S.N.A	AK97-01361A	ASSY-OPT;ZN,SOH-DR3,-	1	SNA	
S.N.A	0201-001411	ADHESIVE-UV;8833,YEL,50000,250G/1B	0.04	SNA	
S.N.A	0201-001525	ADHESIVE-UV;8840L,YEL,TRANS,23000,	0.01	SNA	
S.N.A	0201-001709	ADHESIVE-UV;8839L,YEL,24500mPa.s,-	0.02	SNA	
S.N.A	0201-001819	ADHESIVE-UV;8833M,YELLOW,21000mPas	0.03	SNA	
S.N.A	0602-001127	DIODE-LASER;160mW,2,658nm,CAN	1	SNA	
S.N.A	0602-001128	DIODE-LASER;8.5mW,2,785nm,CAN	1	SNA	
S.N.A	AH61-00812A	SPRING ETC-L/G HOLDER;SOH-DH2,PBR,	1	SNA	
S.N.A	AK61-00470A	HOLDER-LD CD;SOH-DDR,Zn,-,W6.8,L6.	1	SNA	
S.N.A	AK61-00472A	HOLDER-LD DVD;SOH-DDR,Zn,T3.14,W7.	1	SNA	
S.N.A	AK61-00473A	HOLDER-LG;SOH-DDR,Zn,T5.7,W7.2,L10	1	SNA	
S.N.A	AK61-00546A	BASE-PU;SOH-DR3.5,ZnDC,T14.1,W36.3	1	SNA	
S.N.A	AK61-00547A	HOLDER-DVD GT;SOH-DR3.5,Zn,-,T5,L3	1	SNA	
S.N.A	AK63-00264A	COVER-BASE;SOH-DDR,CU,T0.3,W31.3,L	1	SNA	
S.N.A	AK67-00012A	LENS-DR1 CL;SHO-DR1,PLASTIC,NTR,•'	1	SNA	
S.N.A	AK67-00033A	LENS-PLATE;SOH-DR3,GLS,WHT,8.0*4.0	1	SNA	
S.N.A	AK67-00034A	LENS-PBS;SOH-DR3,GLS,WHT,8.7*4.0,2	1	SNA	
S.N.A	AK67-00035A	LENS-MR;SOH-DR3,GLS,WHT,5.0*4.0,2.	1	SNA	
S.N.A	AK67-00036A	LENS-DVD GT;SOH-DR3,GLS,WHT,2.5*3.	1	SNA	
S.N.A	AK67-00038A	LENS-CBS;SOH-DR3,GLS,WHT,3.0*3.0,3	1	SNA	

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
S.N.A	AK67-00041A	LENS-CD GT;SOH-DR2.5,GLS,WHT,2.0*1	1	SNA	
S.N.A	AK67-00052A	LENS-ASL;DR3/BDP,APEL/Z340R,WHT,4P	1	SNA	
S.N.A	AK97-01377A	ASSY-ACT;-,SOH-DR3,-	1	SNA	
S.N.A	0201-001081	ADHESIVE-AA;1401C,RED,-,BOND-LOCK	0.006	SNA	
S.N.A	0201-001230	ADHESIVE-CYA;LOCTITE 480,BLK,300,-	0.002	SNA	
S.N.A	0201-001421	ADHESIVE-UV;SDM-118,TRP,5500,250G/	0.04	SNA	
S.N.A	0201-001709	ADHESIVE-UV;8839L,YEL,24500mPa.s,-	0.01	SNA	
S.N.A	0201-001793	ADHESIVE-UV;8791L3,WHITE,20000mPa.	0.004	SNA	
S.N.A	0202-001214	SOLDER-WIRE FLUX;HI-ALMIT HR19M LF	0.085	SNA	
S.N.A	3302-001651	MAGNET-RARE EARTH;AF,14000Gauss,47	2	SNA	
S.N.A	3812-001263	WIRE-NO SHEATH CU;SCW,-,19MM,-,-,W	5	SNA	
S.N.A	3812-001419	WIRE-NO SHEATH CU;SCW,0V,18.5mm,1/	1	SNA	
S.N.A	AK62-00020A	YOKE-ACT;SOH-DR3,SPCC,T7.6,W24.8,L	1	SNA	
S.N.A	AK67-00037A	LENS-QWP;SOH-DR3,GLS,WHT,4.5*4.5,1	1	SNA	
S.N.A	AK67-00040A	LENS-OL;SOH-DR3,PLS,WHT,3.8,1.7,-,	1	SNA	
S.N.A	AK97-01376A	ASSY-BLADE;-,SOH-DR3,-	1	SNA	
S.N.A	0201-001253	ADHESIVE-STR;TB2212B,BLK,25(250),T	0.008	SNA	
S.N.A	0201-001371	ADHESIVE-SIL;KE3494,GRAY,50 PA,OL	0.001	SNA	
S.N.A	0202-001215	SOLDER-BAR;HSE-16,S60S-20,D3,SN/0.	0.01	SNA	
S.N.A	AK61-00480A	BLADE-ACT;SOH-DR3,E5006JL,IVORY,1	1	SNA	
SPIN_C	3708-002067	CONNECTOR-FPC/FFC/PIC;12P,1mm,SMD-	1	SA	
STEP_C	3708-002018	CONNECTOR-FPC/FFC/PIC;4P,1MM,SMD-A	1	SA	
U8	AK13-00025A	IC ASIC;S5L1484A01,RAMBO-3,256,3.3	1	SNA	
U9	1107-001369	IC-FLASH MEMORY;29LV800,8Mbit,1Mx8	1	SNA	
UB1	1105-001397	IC-DRAM;K4S641632,-,64Mbit,1Mx16x4	1	SA	
UC19	2203-000386	C-CER,CHIP;0.015nF,5%,50V,C0G,1005	1	SA	
UC21	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
UC22	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
UC23	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
UC24	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
UC25	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
UC26	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
UC27	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
UC28	2404-001020	C-TA,CHIP;10uF,20%,10V,GP,TP,3216	1	SA	
UC29	2404-001020	C-TA,CHIP;10uF,20%,10V,GP,TP,3216	1	SA	
UC30	2404-001020	C-TA,CHIP;10uF,20%,10V,GP,TP,3216	1	SA	
UC31	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
UC32	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
UC33	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
UC34	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
UC35	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
UC36	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
UC37	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
UC38	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
UC39	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
UC40	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
UC41	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
UC42	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
UC43	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
UC44	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
UC45	2203-000438	C-CER,CHIP;1nF,10%,50V,X7R,1005	1	SA	
UC46	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
UC47	2203-000254	C-CER,CHIP;10nF,10%,16V,X7R,1005	1	SA	
UC48	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
UC49	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	

This Document can not be used without Samsung's authorization

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
UC50	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
UC51	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
UC52	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
UC53	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
UC54	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
UC55	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
UC56	2203-001071	C-CER,CHIP;0.056nF,5%,50V,C0G,1608	1	SA	
UC57	2203-005438	C-CER,CHIP;0.15nF,10%,50V,X7R,1005	1	SA	
UC62	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
UC63	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
UC64	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
UC65	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
UC67	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
UC69	2404-001020	C-TA,CHIP;10uF,20%,10V,GP,TP,3216	1	SA	
UC70	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
UC71	2404-001020	C-TA,CHIP;10uF,20%,10V,GP,TP,3216	1	SA	
UC72	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
UC75	2404-001020	C-TA,CHIP;10uF,20%,10V,GP,TP,3216	1	SA	
UC76	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
UC77	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
UC79	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
UC80	2203-000438	C-CER,CHIP;1nF,10%,50V,X7R,1005	1	SA	
UC81	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
UR1	2011-001432	R-NET;82ohm,5%,1/16W,L,CHIP,8P,TP,	1	SA	
UR10	2007-001217	R-CHIP;82OHM,5%,1/16W,TP,1005	1	SA	
UR11	2007-000173	R-CHIP;22ohm,5%,1/16W,TP,1005	1	SA	
UR12	2007-000173	R-CHIP;22ohm,5%,1/16W,TP,1005	1	SA	
UR13	2007-001217	R-CHIP;82OHM,5%,1/16W,TP,1005	1	SA	
UR14	2007-001217	R-CHIP;82OHM,5%,1/16W,TP,1005	1	SA	
UR16	2007-000170	R-CHIP;1Mohm,5%,1/16W,TP,1005	1	SA	
UR17	2007-000143	R-CHIP;4.7Kohm,5%,1/16W,TP,1005	1	SA	
UR2	2011-001261	R-NET;33ohm,5%,1/16W,L,CHIP,8P,TP,	1	SA	
UR20	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	
UR21	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	
UR22	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	
UR23	2007-000174	R-CHIP;47ohm,5%,1/16W,TP,1005	1	SA	
UR24	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	
UR25	2007-001292	R-CHIP;33ohm,5%,1/16W,TP,1005	1	SA	
UR26	2007-001292	R-CHIP;33ohm,5%,1/16W,TP,1005	1	SA	
UR27	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	
UR28	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	
UR29	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	
UR3	2011-001261	R-NET;33ohm,5%,1/16W,L,CHIP,8P,TP,	1	SA	
UR32	2007-000171	R-CHIP;0ohm,5%,1/16W,TP,1005	1	SA	
UR36	2007-000171	R-CHIP;0ohm,5%,1/16W,TP,1005	1	SA	
UR37	2007-001325	R-CHIP;3.3Kohm,5%,1/16W,TP,1005	1	SA	
UR39	2007-000775	R-CHIP;33KOHM,5%,1/16W,TP,1005	1	SA	
UR4	2011-001261	R-NET;33ohm,5%,1/16W,L,CHIP,8P,TP,	1	SA	
UR40	2007-000171	R-CHIP;0ohm,5%,1/16W,TP,1005	1	SA	
UR41	2007-000171	R-CHIP;0ohm,5%,1/16W,TP,1005	1	SA	
UR42	2007-007001	R-CHIP;3.9KOHM,5%,1/16W,TP,1005	1	SA	
UR43	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	
UR44	2007-000171	R-CHIP;0ohm,5%,1/16W,TP,1005	1	SA	
UR47	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	
UR48	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	
UR49	2007-000143	R-CHIP;4.7Kohm,5%,1/16W,TP,1005	1	SA	
UR5	2011-001261	R-NET;33ohm,5%,1/16W,L,CHIP,8P,TP,	1	SA	
UR55	2007-000143	R-CHIP;4.7Kohm,5%,1/16W,TP,1005	1	SA	
UR58	2007-000143	R-CHIP;4.7Kohm,5%,1/16W,TP,1005	1	SA	
UR59	2007-000143	R-CHIP;4.7Kohm,5%,1/16W,TP,1005	1	SA	
UR6	2007-000173	R-CHIP;22ohm,5%,1/16W,TP,1005	1	SA	
UR63	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
UR64	2007-000143	R-CHIP;4.7Kohm,5%,1/16W,TP,1005	1	SA	
UR69	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	
UR7	2007-001217	R-CHIP;82OHM,5%,1/16W,TP,1005	1	SA	
UR73	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70M	1	SA	
UR75	2007-000113	R-CHIP;33ohm,5%,1/10W,TP,1608	1	SA	
UR76	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
UR77	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70M	1	SA	
UR8	2007-001217	R-CHIP;82OHM,5%,1/16W,TP,1005	1	SA	
UR80	2007-000140	R-CHIP;1Kohm,5%,1/16W,TP,1005	1	SA	
UR81	2007-000171	R-CHIP;0ohm,5%,1/16W,TP,1005	1	SA	
UR87	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	
UR88	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70M	1	SA	
UR89	2007-000171	R-CHIP;0ohm,5%,1/16W,TP,1005	1	SA	
UR9	2007-000173	R-CHIP;22ohm,5%,1/16W,TP,1005	1	SA	
UR90	2007-000831	R-CHIP;39Kohm,5%,1/16W,TP,1005	1	SA	
UR91	2007-000171	R-CHIP;0ohm,5%,1/16W,TP,1005	1	SA	
UR92	2007-000171	R-CHIP;0ohm,5%,1/16W,TP,1005	1	SA	
UR93	2007-000171	R-CHIP;0ohm,5%,1/16W,TP,1005	1	SA	
UR97	2007-000171	R-CHIP;0ohm,5%,1/16W,TP,1005	1	SA	
UR98	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	
VC1	2203-006047	C-CER,CHIP;33nF,10%,16V,X7R,1005	1	SA	
VC10	2203-000438	C-CER,CHIP;1nF,10%,50V,X7R,1005	1	SA	
VC11	2203-005061	C-CER,CHIP;100nF,+80-20%,16V,Y5V,1	1	SA	
VC12	2203-005061	C-CER,CHIP;100nF,+80-20%,16V,Y5V,1	1	SA	
VC13	2404-000284	C-TA,CHIP;10uF,20%,16V,-,TP,3528	1	SA	
VC14	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
VC15	2203-000254	C-CER,CHIP;10nF,10%,16V,X7R,1005	1	SA	
VC16	2203-005061	C-CER,CHIP;100nF,+80-20%,16V,Y5V,1	1	SA	
VC17	2203-005061	C-CER,CHIP;100nF,+80-20%,16V,Y5V,1	1	SA	
VC18	2203-005061	C-CER,CHIP;100nF,+80-20%,16V,Y5V,1	1	SA	
VC19	2203-005061	C-CER,CHIP;100nF,+80-20%,16V,Y5V,1	1	SA	
VC2	2203-006047	C-CER,CHIP;33nF,10%,16V,X7R,1005	1	SA	
VC20	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,1005	1	SA	
VC21	2404-001020	C-TA,CHIP;10uF,20%,10V,GP,TP,3216	1	SA	
VC3	2203-006047	C-CER,CHIP;33nF,10%,16V,X7R,1005	1	SA	
VC4	2203-006047	C-CER,CHIP;33nF,10%,16V,X7R,1005	1	SA	
VC5	2203-006047	C-CER,CHIP;33nF,10%,16V,X7R,1005	1	SA	
VC6	2203-006047	C-CER,CHIP;33nF,10%,16V,X7R,1005	1	SA	
VIC1	1003-001881	IC-MOTOR DRIVER;BD7956FS,HSSOP,54P	1	SA	
VR1	2007-000138	R-CHIP;100ohm,5%,1/16W,TP,1005	1	SA	
VR10	2007-000138	R-CHIP;100ohm,5%,1/16W,TP,1005	1	SA	
VR11	2007-000034	R-CHIP;1OHM,5%,1/4W,TP,3216	1	SA	
VR12	2007-000034	R-CHIP;1OHM,5%,1/4W,TP,3216	1	SA	
VR13	2007-000034	R-CHIP;1OHM,5%,1/4W,TP,3216	1	SA	
VR14	2007-000034	R-CHIP;1OHM,5%,1/4W,TP,3216	1	SA	
VR16	2007-000034	R-CHIP;1OHM,5%,1/4W,TP,3216	1	SA	
VR18	2007-000034	R-CHIP;1OHM,5%,1/4W,TP,3216	1	SA	
VR20	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	

This Document can not be used without Samsung's authorization

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
VR25	2007-007107	R-CHIP;100Kohm,1%,1/16W,TP,1005	1	SA	
VR26	2007-000159	R-CHIP;56Kohm,5%,1/16W,TP,1005	1	SA	
VR27	2007-000159	R-CHIP;56Kohm,5%,1/16W,TP,1005	1	SA	
VR28	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	
VR31	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70M	1	SA	
VR32	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70M	1	SA	
VR33	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70M	1	SA	
VR34	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70M	1	SA	
VR35	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70M	1	SA	
VR36	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70M	1	SA	
VR37	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70M	1	SA	
VR38	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70M	1	SA	
VR39	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70M	1	SA	
VR40	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70M	1	SA	
VR41	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70M	1	SA	
VR42	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70M	1	SA	
VR43	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70M	1	SA	
VR5	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	
VR6	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	
VR8	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	
VR9	2007-000164	R-CHIP;150KOHM,5%,1/16W,TP,1005	1	SA	
W012	6002-001086	SCREW-TAPPING;PH,+,B,M1.7,L5.0,ZPC	1	SA	
W018	6003-001450	SCREW-TAPTITE;PH,+,S,M2.6,L5,ZPC(Y	2	SA	
W274	6001-001730	SCREW-MACHINE;BH,+,-,M1.7,L2.5,ZPC	2	SA	
W291	6001-001291	SCREW-MACHINE;CH(0.5),*,-,M1.7,L4,	3	SA	
W350	6001-001003	SCREW-MACHINE;BH,+,M2.6,L6,ZPC(BLK	4	SA	
W352	6001-000883	SCREW-MACHINE;PH,+,M1.4,L5,ZPC(BLK	1	SNA	
W353	6003-001199	SCREW-TAPTITE;PWH,+,B,M2,L7,ZPC(YE	4	SA	
W354	6003-001258	SCREW-TAPTITE;PH,+,B,M1.4,L2.0,NI	4	SA	
W355	6003-001526	SCREW-TAPTITE;CH,+,S-TITE,M1.4,L4,	2	SNA	
Y1	2802-001163	RESONATOR-CERAMIC;33.86MHz,0.5%,TP	1	SA	
	AC99-40324W	ASSY PCB-F/END,c;SV-R3600,F/END AS	1	SNA	
	AC99-50326B	ASSY PCB-F/END,t;SV-R3600,F/END AS	1	SNA	
	0202-001221	SOLDER-CREAM;PF305-116HO(A),-,25~4	4.04	SNA	
	AC99-80325R	ASSY PCB-F/END,mrp;SV-R3600,F/END	1	SNA	
	AC99-90326Z	ASSY PCB-F/END,m;SV-R3600,F/END AS	1	SNA	
	0202-001214	SOLDER-WIRE FLUX;HI-ALMIT HR19M LF	0.167	SNA	
	AK68-00433A	LABEL WARNING-DRIVE;DP-R1,-,ART PA	1	SNA	
	AK97-01325A	ASSY-HOUSING;-,DP-RW2,ASSY	1	SNA	
	3403-001026	SWITCH-PUSH;5V,0.7mA,DPST,OFF-ON-O	1	SA	
	AK41-00397A	PCB-DECK;DP-RW2,PHENOL,1,00,T1.6,2	1	SNA	
	AK41-00400A	FFC-DECK;DP-RW2,PITCH1.0,PET,5P,-,	1	SNA	
	AK97-01327A	ASSY-P U DECK;ASSY,DP-RW2,DP-RW2	1	SNA	
	AK31-00024A	MOTOR STEP-FEED;-,DP-RW,727 mA,200	1	SNA	
	AK61-00488A	BRACKET-DECK;DP-RW2,SECC US COATIN	1	SNA	
	AK61-00490A	SPRING ETC-SHAFT PU;DP-RW2,PW2,0.8	2	SNA	
	AC99-40324X	ASSY-FPCB,c;-,SOH-DR2.5,RAMBO2.5 F	1	SNA	
	AC99-80325S	ASSY-FPCB,mrp;-,SOH-DR2.5,RAMBO2.5	1	SNA	
	AC99-90327A	ASSY-FPCB,m;-,SOH-DR2.5,RAMBO2.5 F	1	SNA	
	AK97-01328A	ASSY-HOLDER CHUCK;ASSY,DP-RW2,DP-R	1	SNA	
	AK97-01331A	ASSY-CLAMPER;POM+MAGNET,DP-RW2,ASS	1	SNA	
	AK61-00486A	BODY CLAMPER-UPPER;DP-RW2,POM,T0.7	1	SNA	
	AK61-00487A	BRACKET-CLAMPER;DP-RW2,SECC,T0.6,1	1	SNA	
	BG33-30001D	MAGNET-CLAMPER;-,-,-,-,13.5x6x1.1	1	SNA	

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
A001	**AK59-00055B**	**REMOCON-ASSY;DVD-R130/XEG,SEC,197.**	**1**	**SA**	
CT01	2401-002144	C-AL;47uF,20%,16V,GP,TP,5x11,5	1	SA	
CT02	2203-000192	C-CER,CHIP;100nF,+80-20%,50V,Y5V,2	1	SA	
CT03	2203-000192	C-CER,CHIP;100nF,+80-20%,50V,Y5V,2	1	SA	
LDT01	0601-000519	LED-IR;ROUND,5mm,170mW,4V,940nm,TP	1	SA	
OP8	2007-000029	R-CHIP;0ohm,5%,1/8W,TP,2012	1	SA	
QT1	0501-000534	TR-SMALL SIGNAL;2SC2412K,NPN,200mW	1	SA	
RT01	2007-000881	R-CHIP;4.7ohm,5%,1/8W,TP,2012	1	SA	
RT02	2007-000593	R-CHIP;22ohm,5%,1/8W,TP,2012	1	SA	
RT03	2007-000102	R-CHIP;100Kohm,5%,1/10W,TP,1608	1	SA	
XT01	2802-001094	RESONATOR-CERAMIC;4.0MHz,0.5%,TP,8	1	SA	
C- A/V	AC39-42001R	CABLE-A/V;PVC,-,-,3P,-,-,-	1	SA	
C001	AK97-01447K	ASSY-CABINET FRONT;HIPS 94 HB,DVD-	1	SA	
C002	AK64-01432A	DOOR-TRAY;DVD-R130,ABS 94HB,T2,H15	1	SA	
C011	AK61-00519A	SPRING ETC-DOOR;DVD-SR420,STS304WP	1	SA	
C015	AK64-01375A	CABINET-TOP;DVD-R110,PCM,T0.6,W430	1	SA	
C657	AK64-01433C	DOOR-JACK;DVD-R130/XEF,ABS 94HB,T2	1	SA	
CABLE	AC39-00017A	CABLE-ETC-RF(PAL);-,MALE/FEMALE,12	1	SA	
FL620	3809-001793	FFC CABLE-FLAT;30V,80C,90mm,40P,0.	1	SA	
I/B	AK68-01003P	MANUAL USERS;DVD-R130,XEV,RUS,UKR,	1	SA	
P025	AC39-10019A	CBF-POWER CORD;KKP-419C,H03VVH2-F,	1	SA	
PACK	AK69-00381L	PACKING CASE;DVD-R130/XEV,SW-2,A-1	1	SA	
VS106	AK39-00089A	LEAD CONNECTOR;DVD-R130E,LEAD CONN	1	SA	
W001	6003-000275	SCREW-TAPTITE;BH,+,-B,M3,L10,ZPC(	2	SA	
W009	6003-000276	SCREW-TAPTITE;BH,+,-B,M3,L10,ZPC(	8	SA	
W200	6003-001375	SCREW-TAPTITE;BH,+,B,M3,L8,ZPC(YEL	2	SA	
W268	6003-000254	SCREW-TAPTITE;BH,+,-S,M3,L6,ZPC(W	1	SA	
W272	6003-001464	SCREW-TAPTITE;BH,+,B,M3,L10,ZPC(WH	1	SA	
W272	6003-001464	SCREW-TAPTITE;BH,+,B,M3,L10,ZPC(WH	5	SA	
W275	6003-001561	SCREW-TAPTITE;BH,+,-B,M3,L6,ZPC(Y	5	SA	

This Document can not be used without Samsung's authorization

8. Block Diagrams

8-1 All Block Diagram ---------- 8-2

8-2 AIC1(PCM1753) Audio DA Block Diagram ---------- 8-3

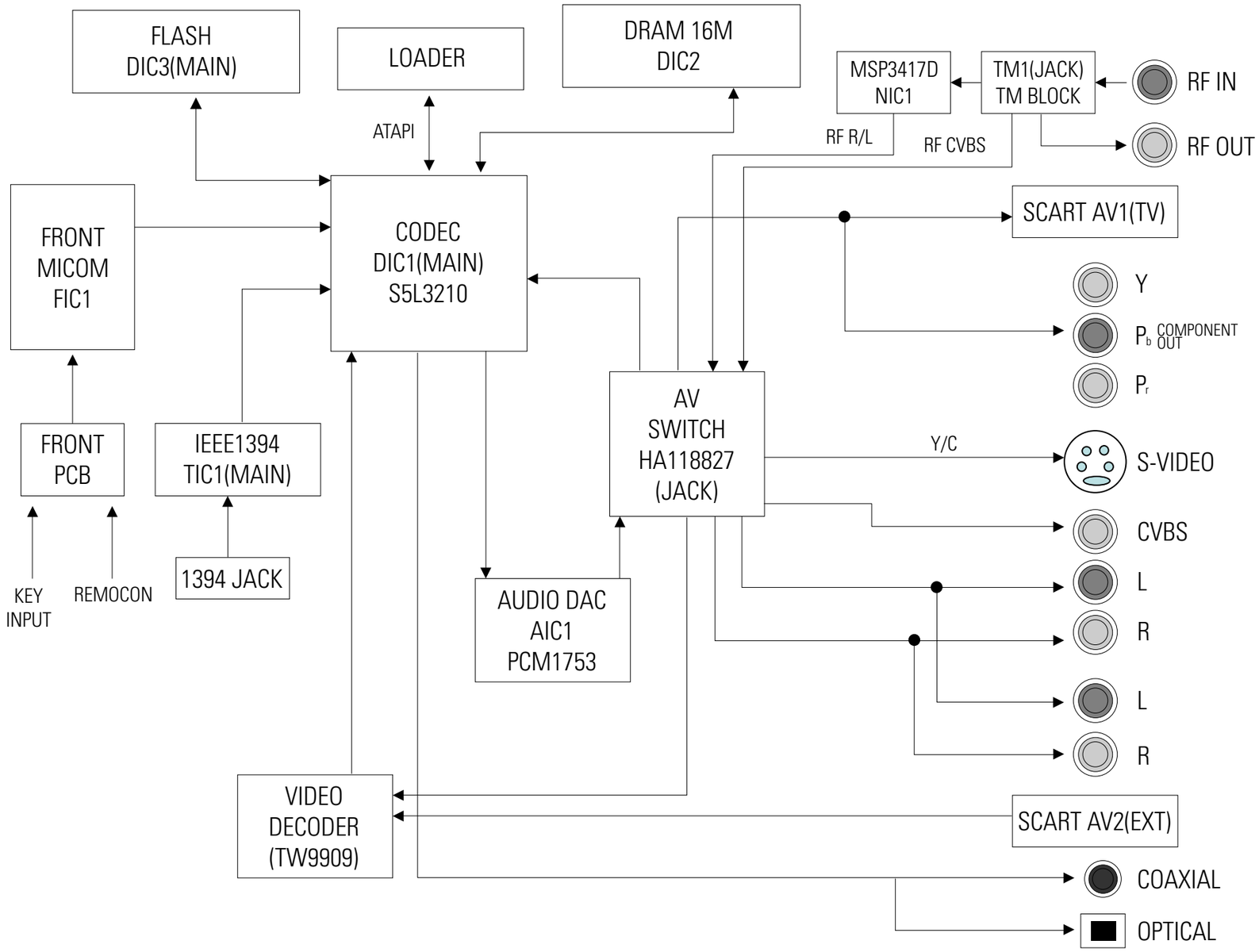
8-3 System Block Diagram ---------- 8-4

8-4 TIC1(TW9909) Video Decoder Block Diagram ---------- 8-5

8-5 Internal Block Diagram ---------- 8-6

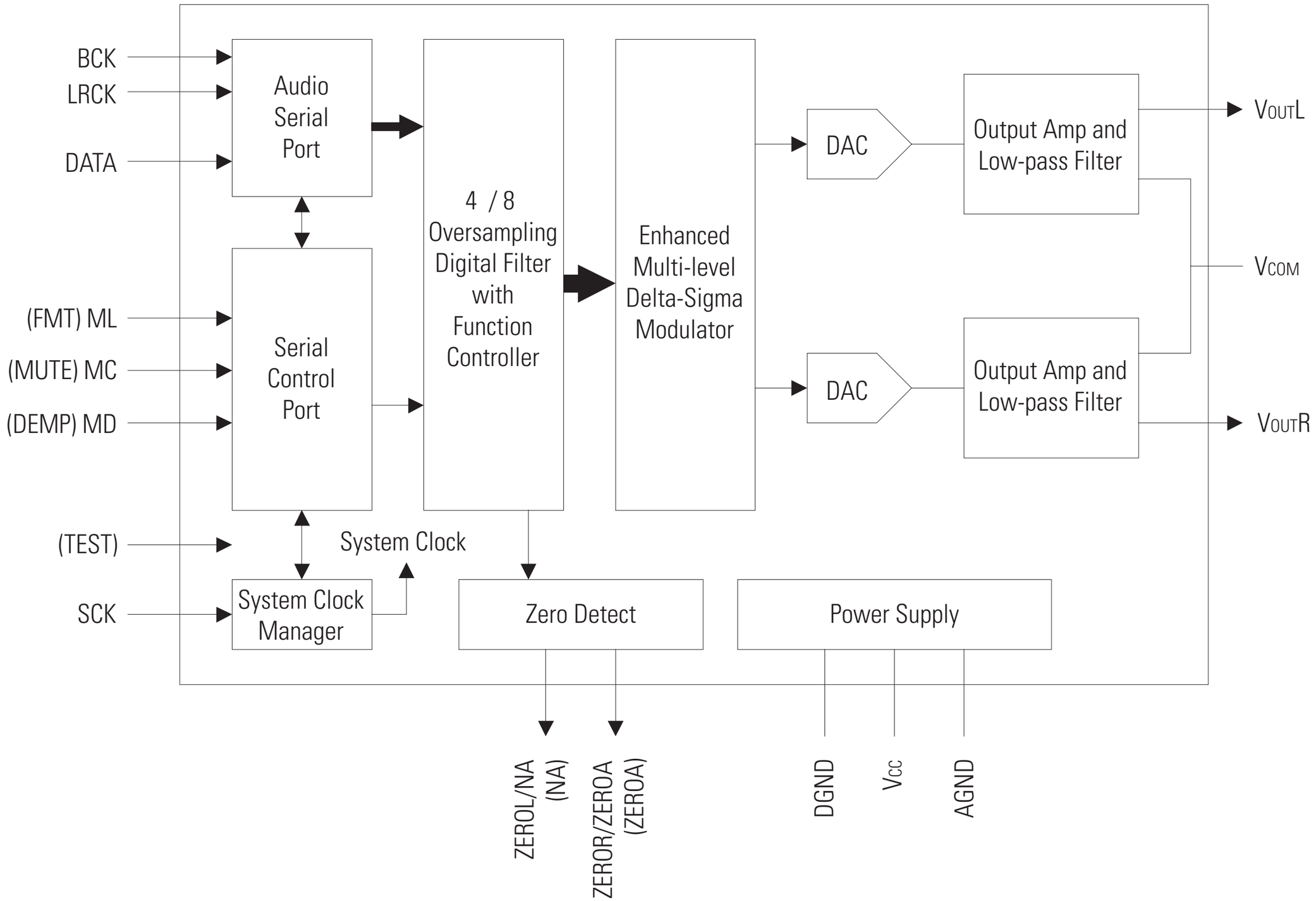
8-6 HA118827F-E Block Diagram ---------- 8-7

8-1 All Block Diagram



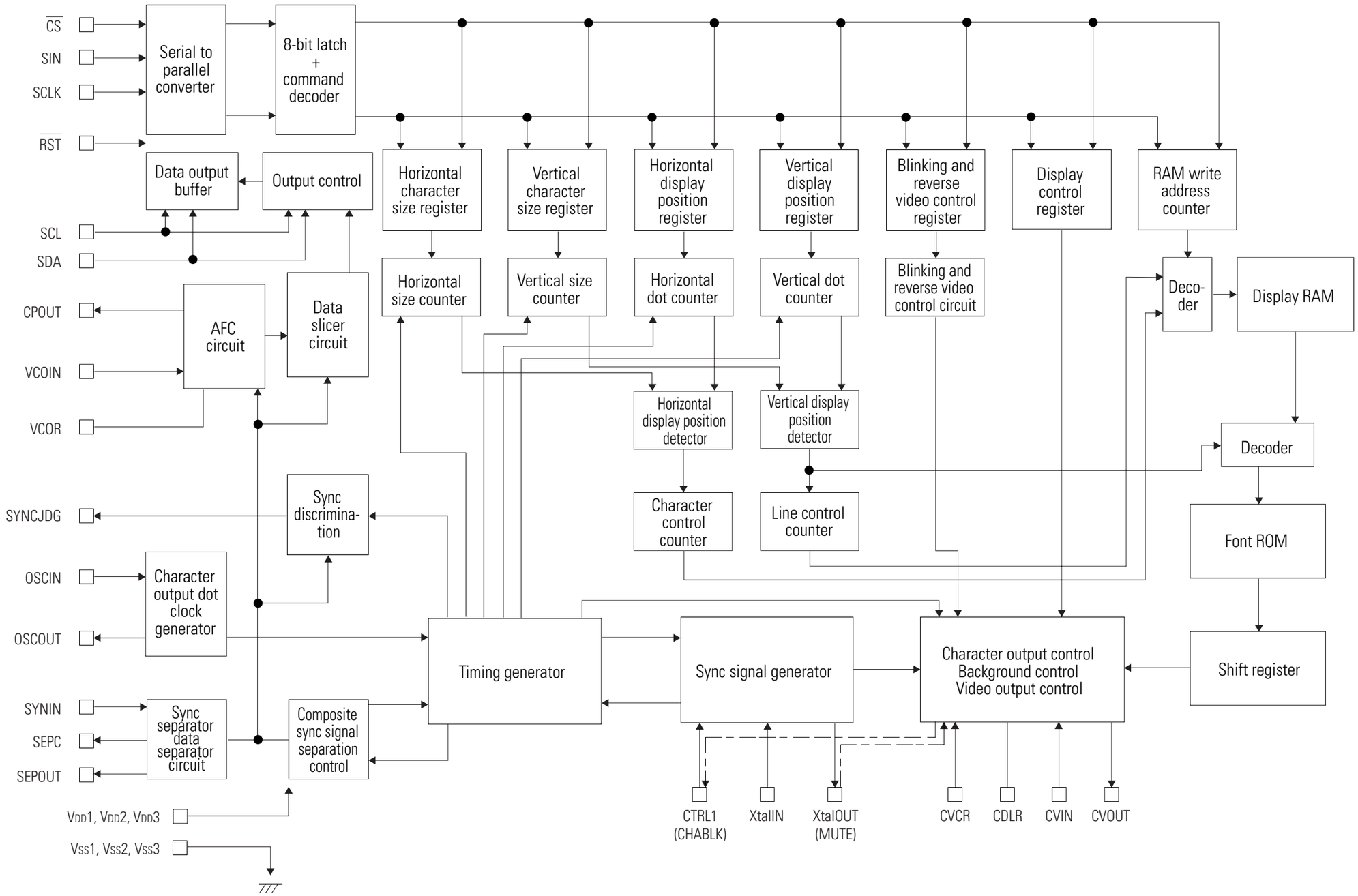
This Document can not be used without Samsung's authorization.

8-2 AIC1(PCM1753) Audio DA Block Diagram



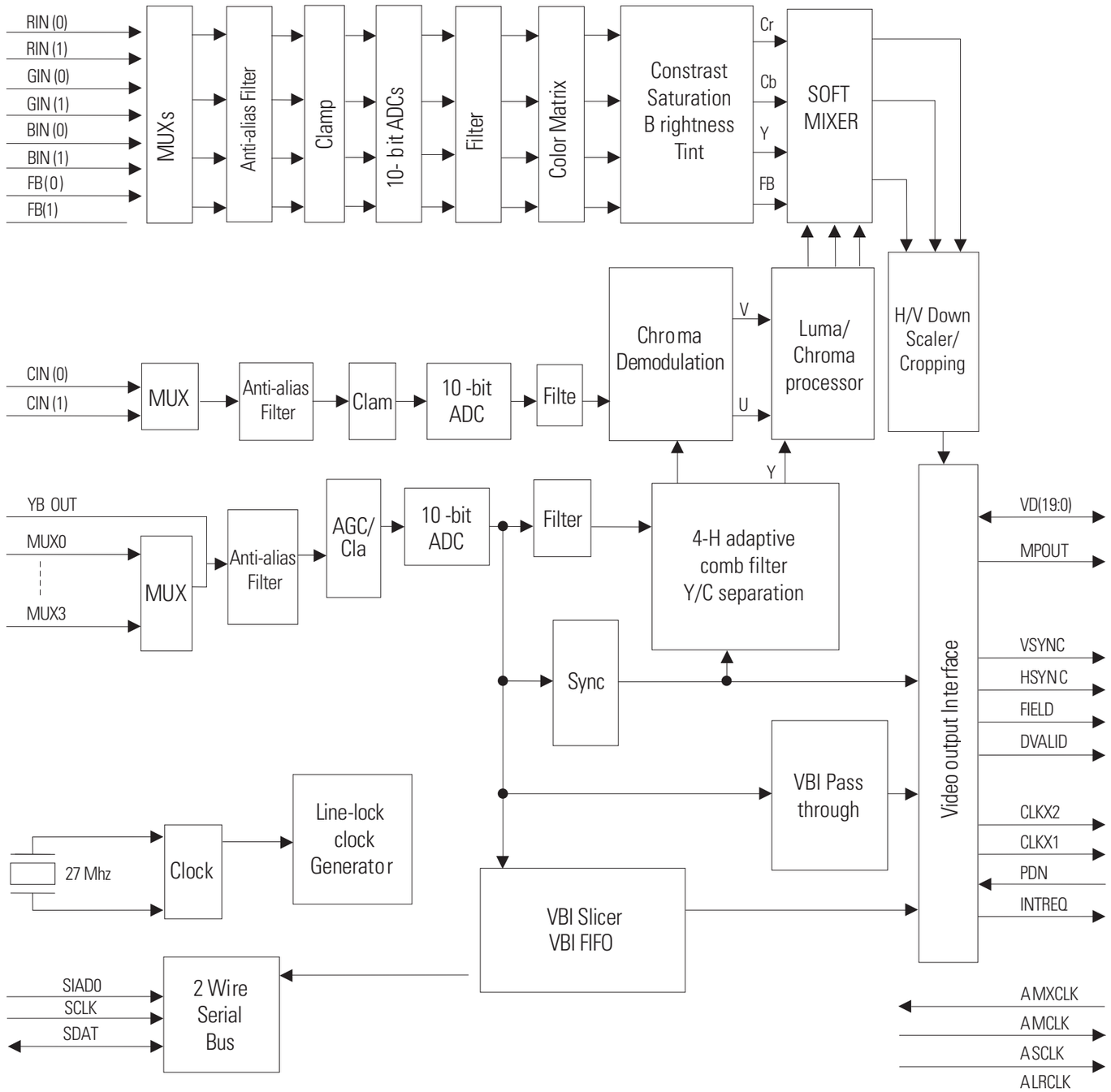
This Document can not be used without Samsung's authorization.

8-3 System Block Diagram



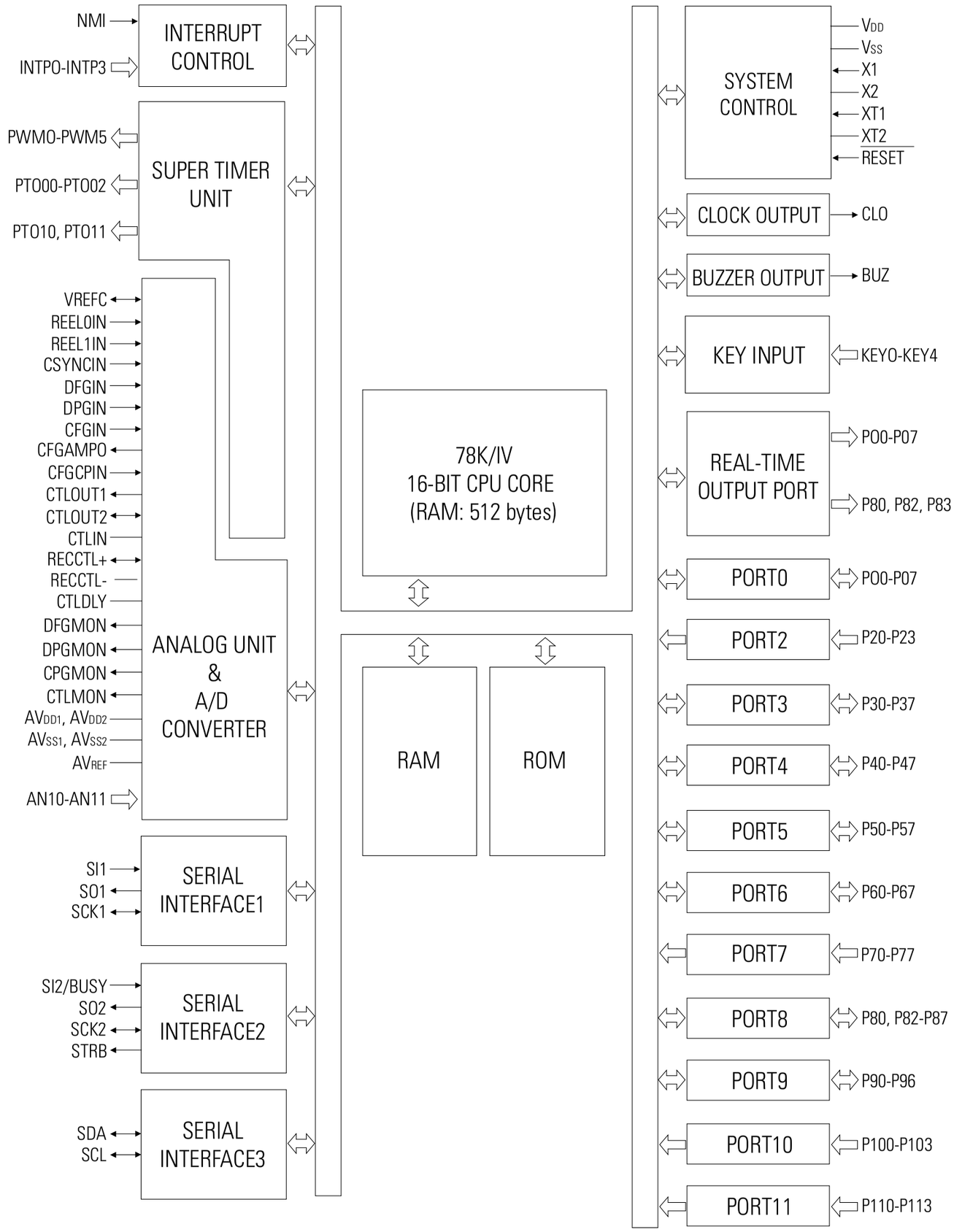
This Document can not be used without Samsung's authorization.

8-4 TIC1(TW9909) Video Decoder Block Diagram



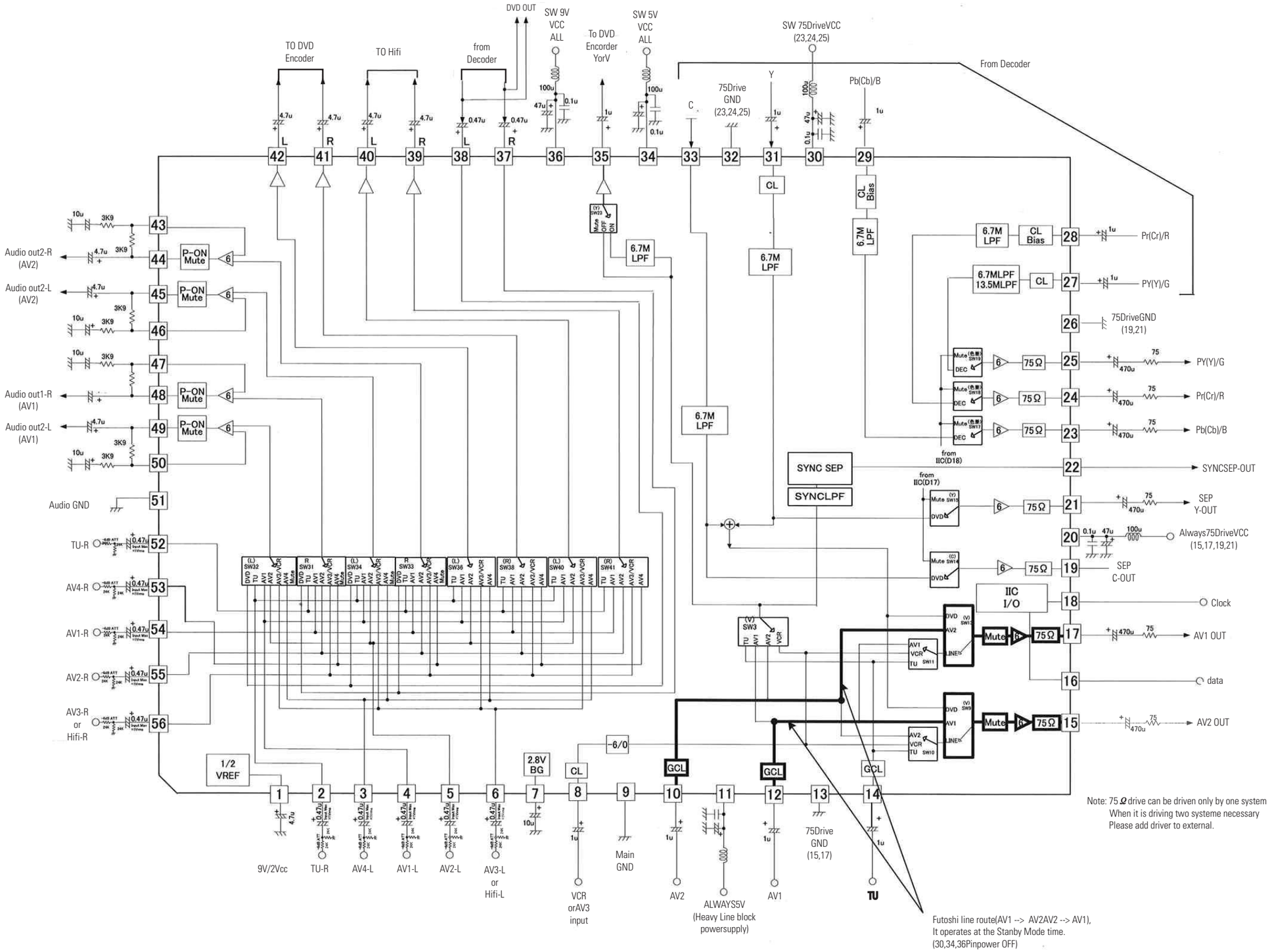
This Document can not be used without Samsung's authorization.

8-5 Internal Block Diagram



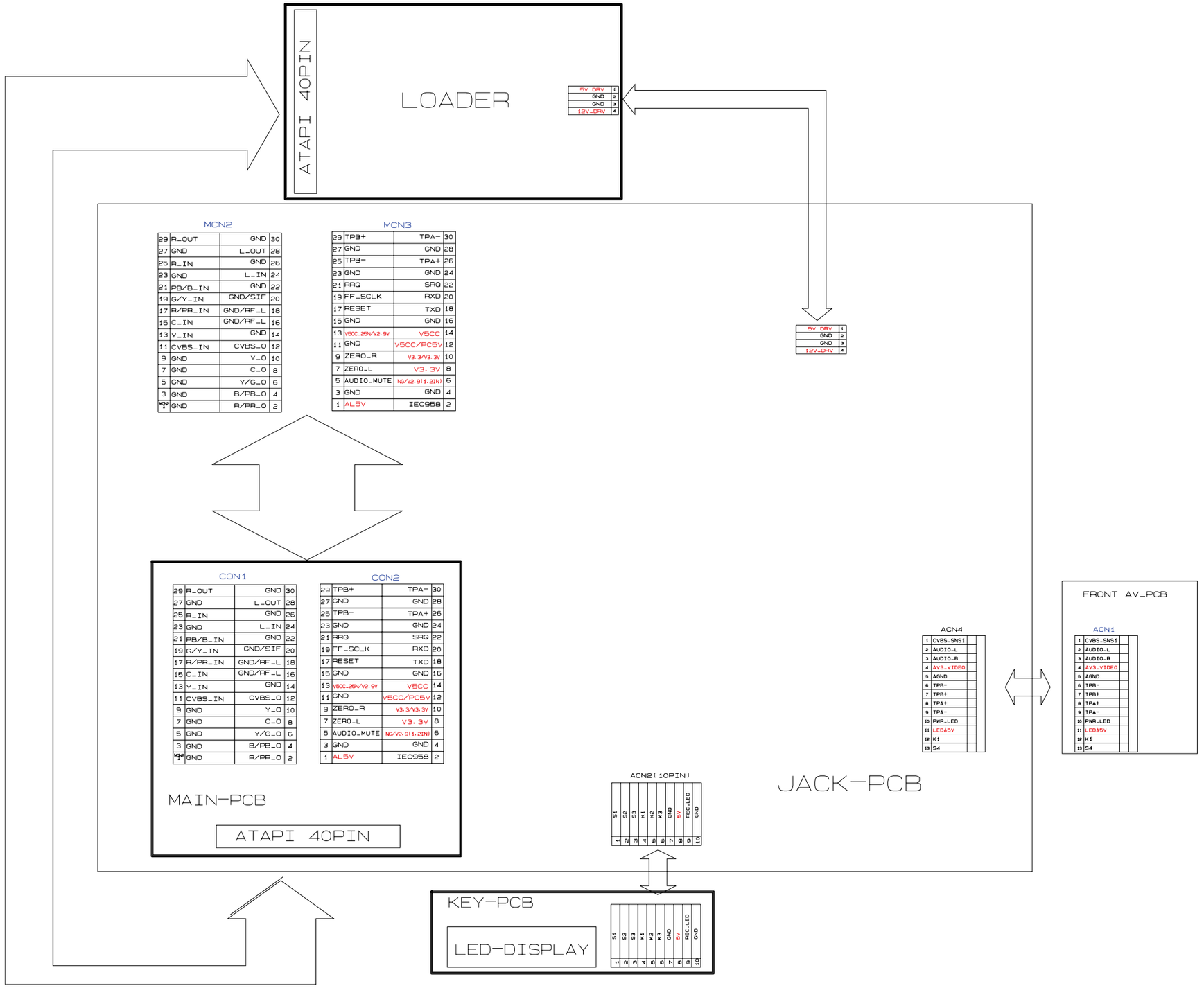
This Document can not be used without Samsung's authorization.

8-6 HA118827F-E Block Diagram



MEMO

9. Wiring Diagram



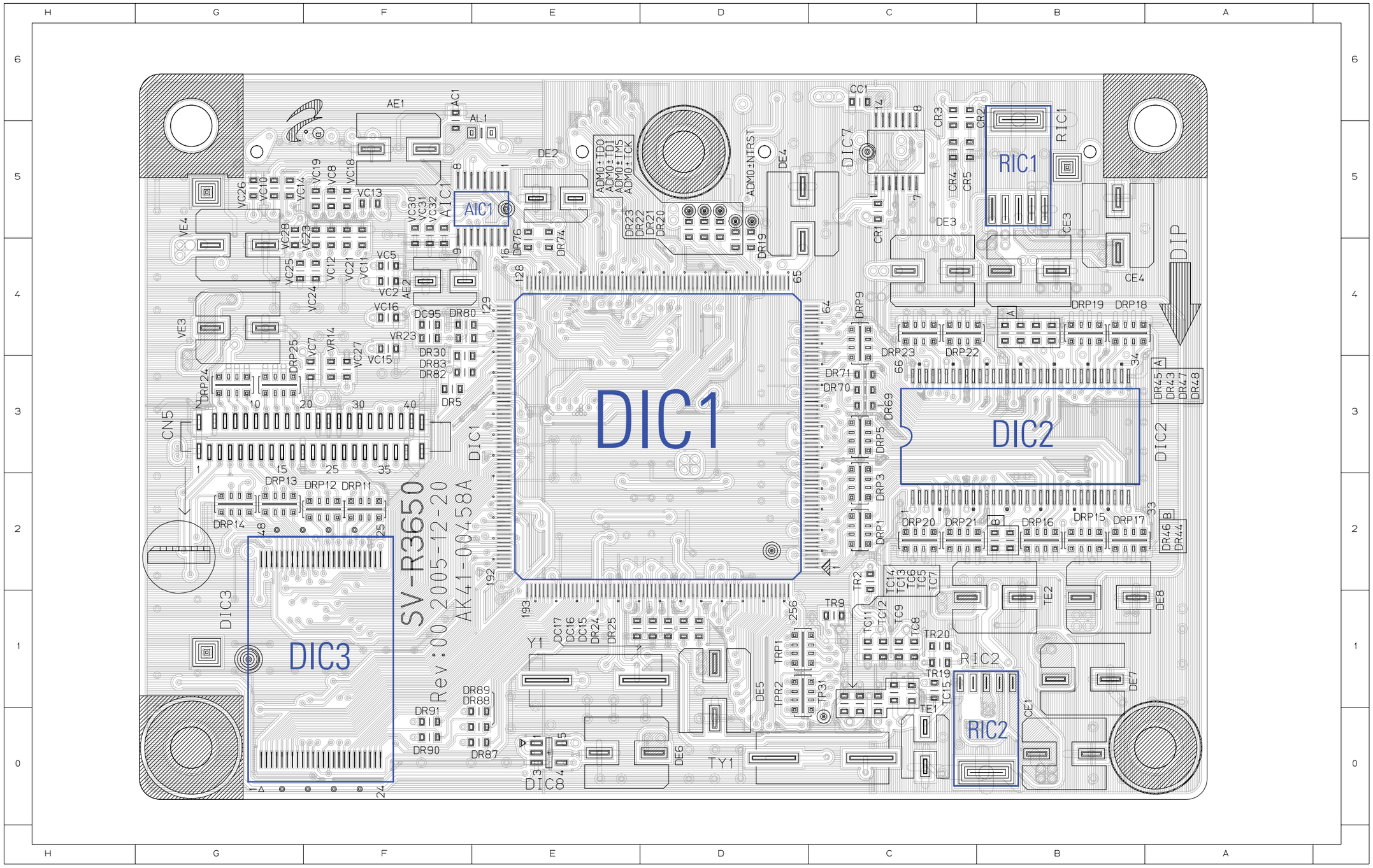
MEMO

10. PCB Diagrams

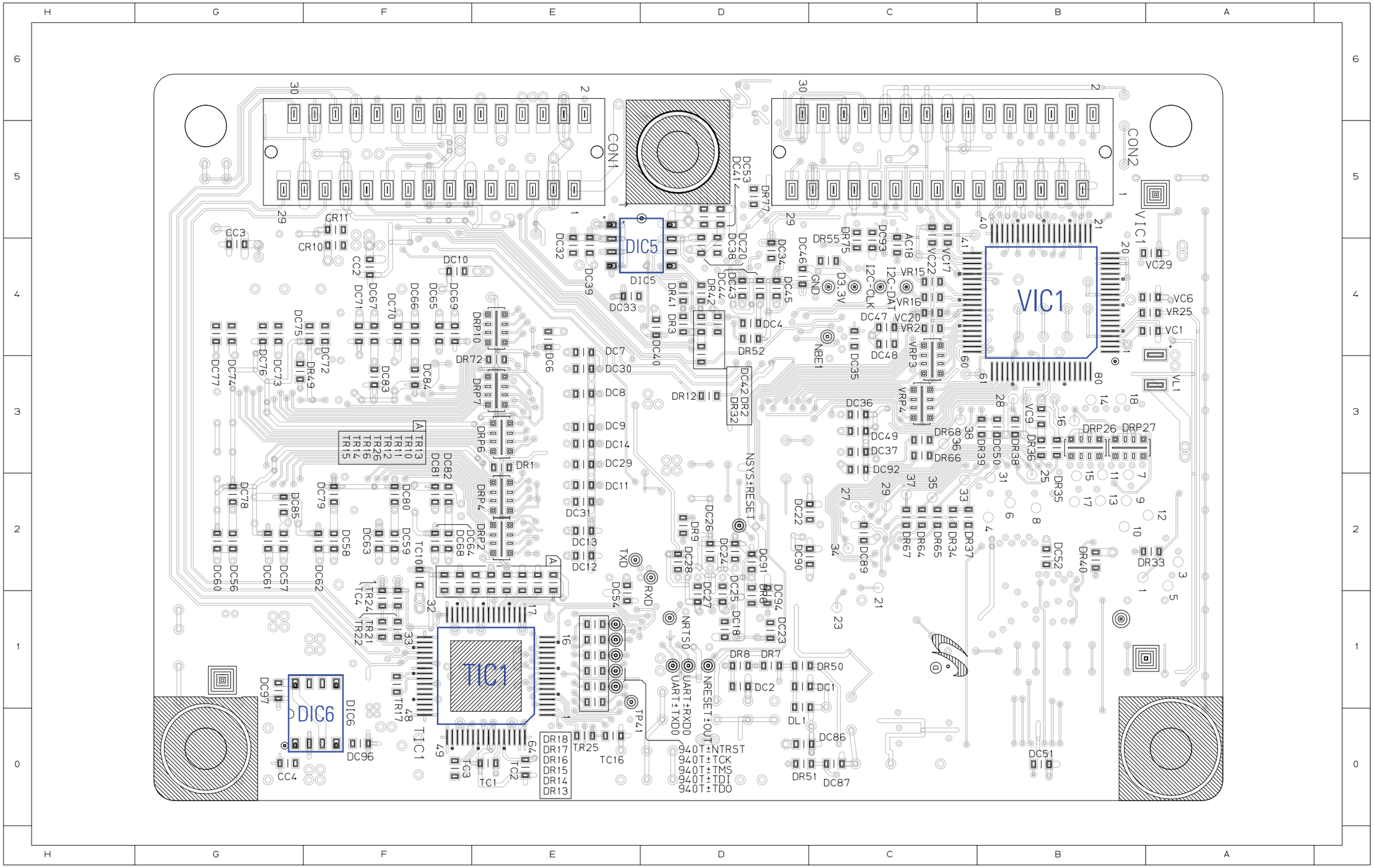
10-1 Main PCB - - -

10-1 Main PCB

COMPONENT SIDE

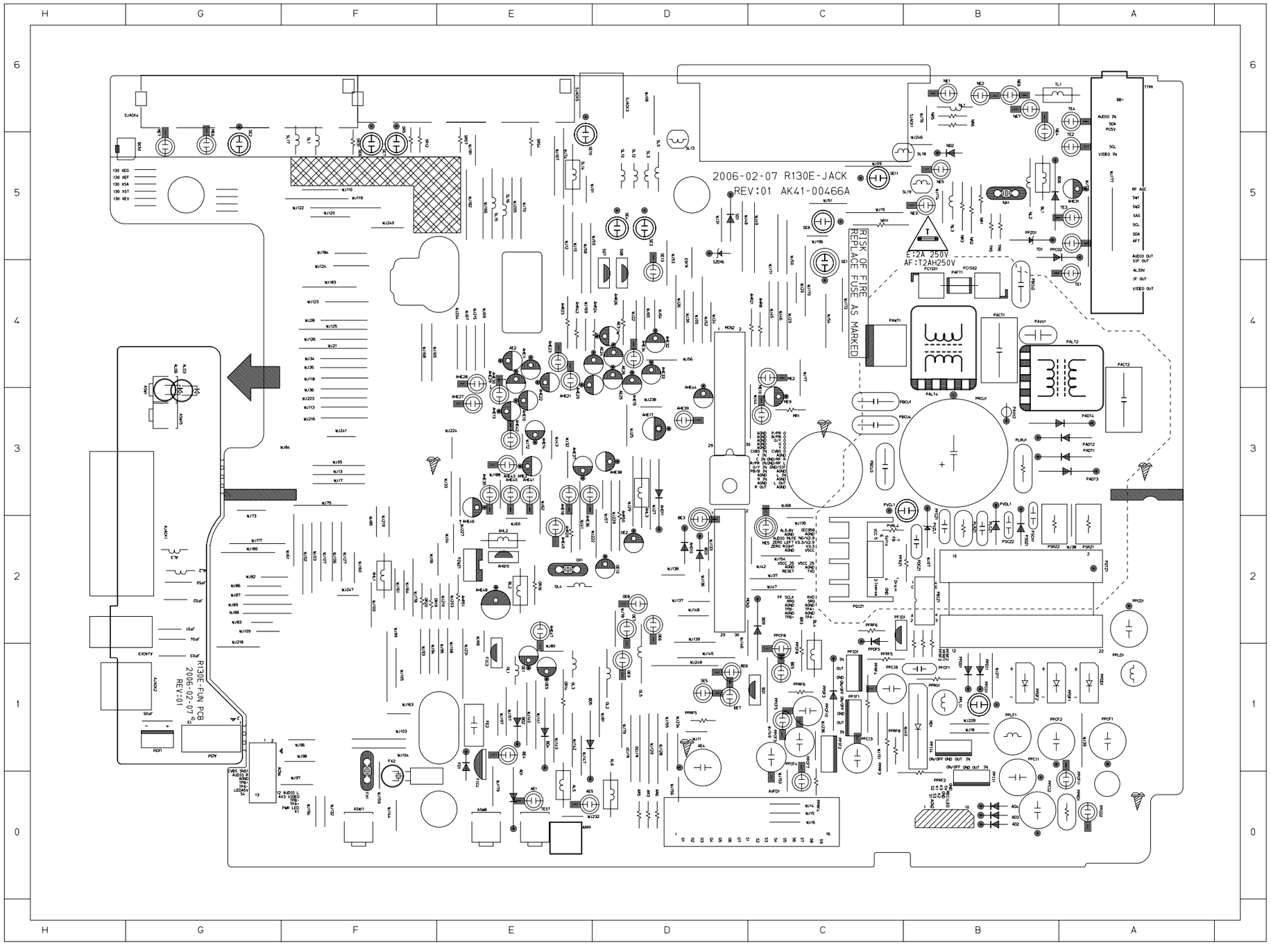


CONDUCTOR SIDE

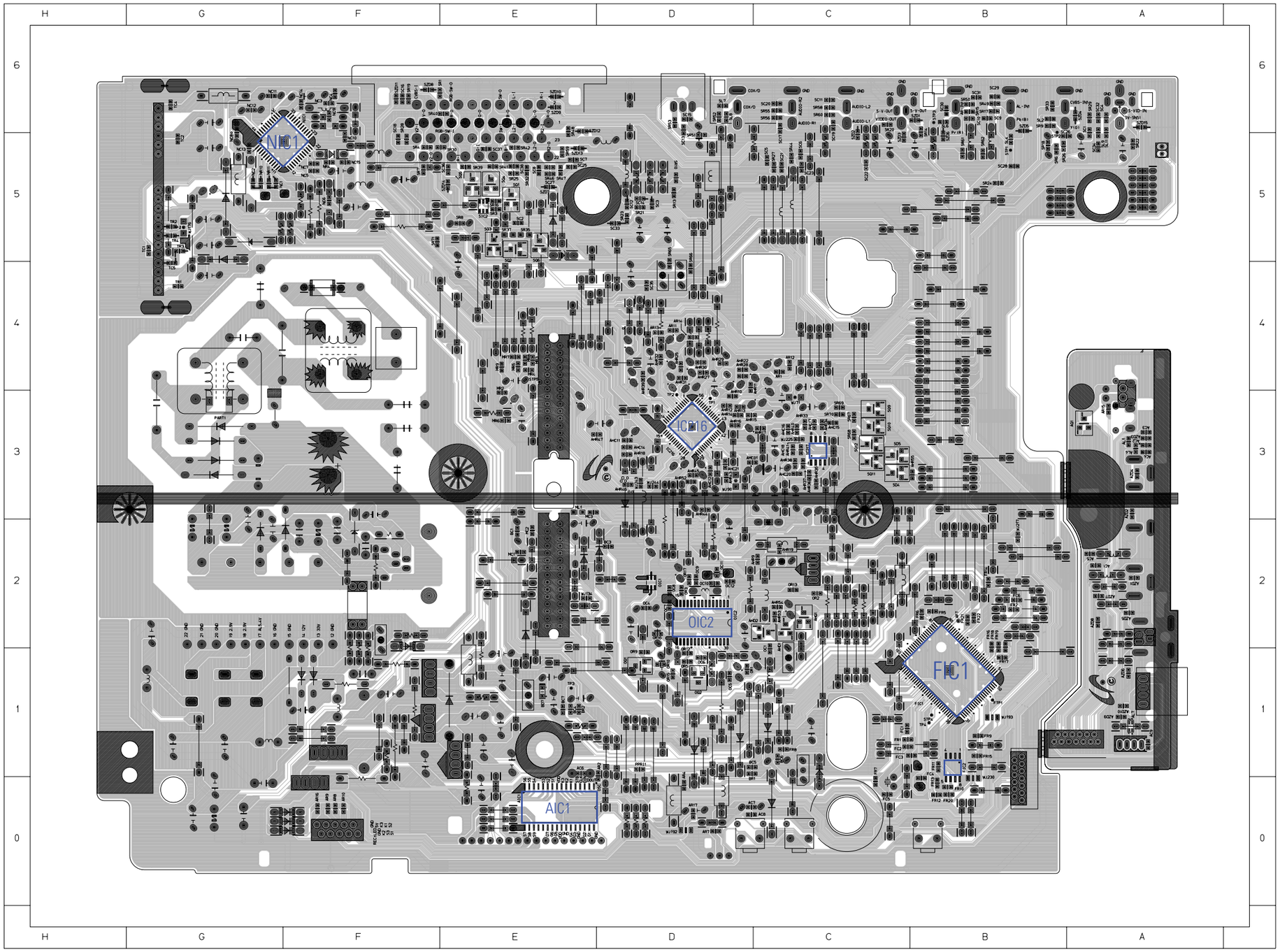


10-2 Jack PCB

COMPONENT SIDE

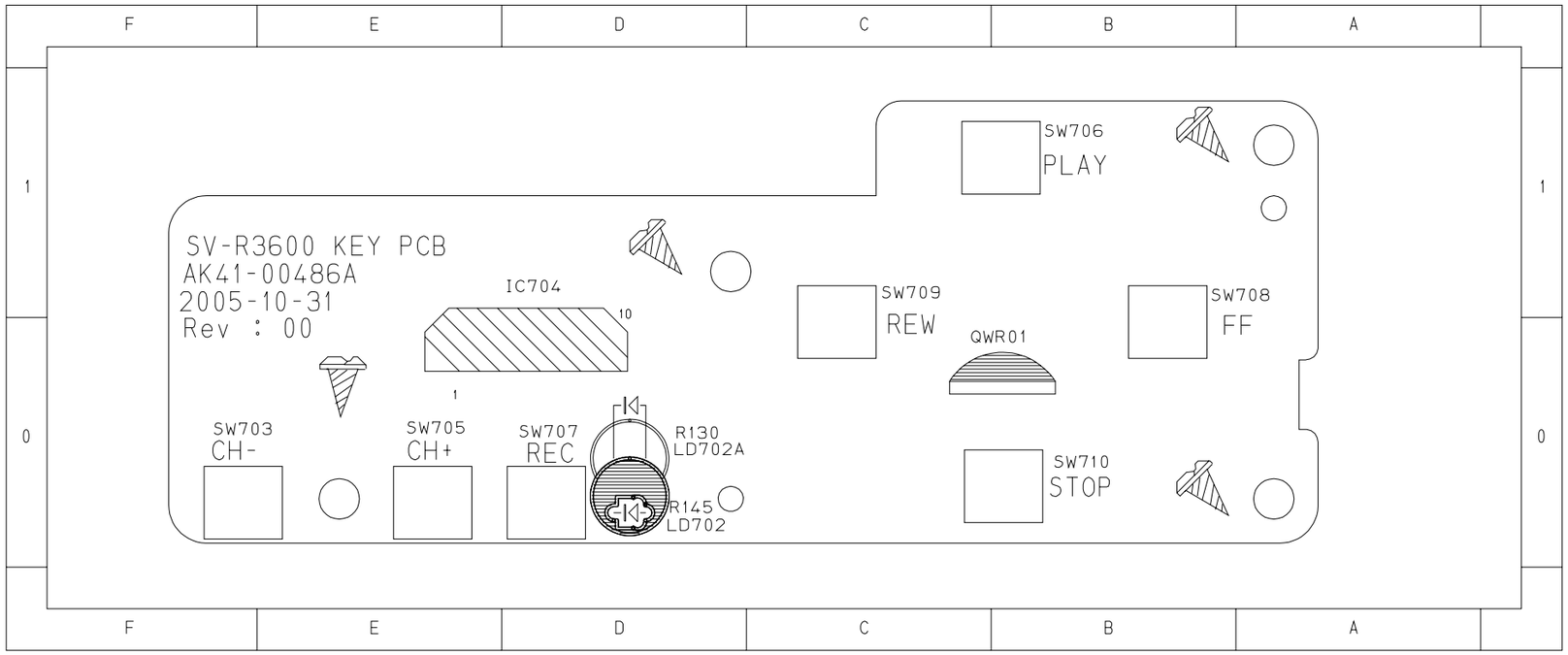


CONDUCTOR SIDE

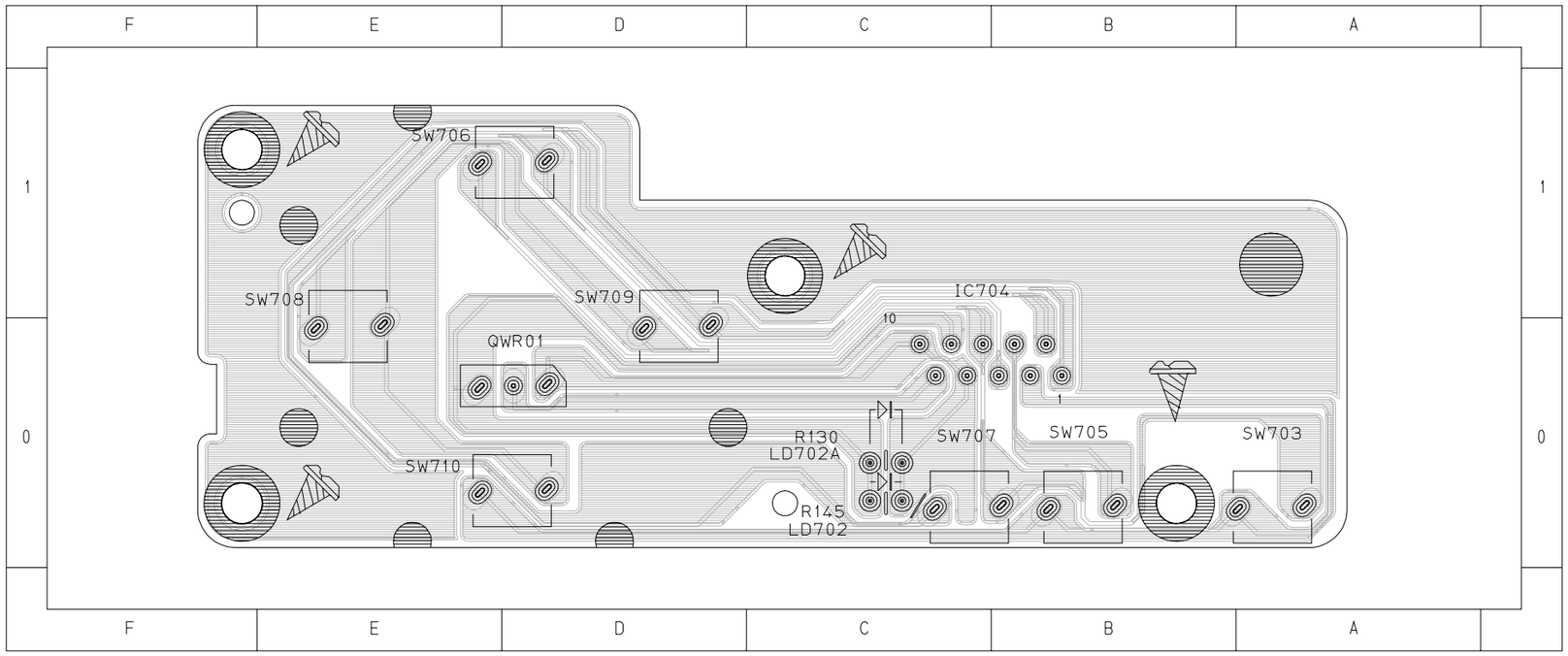


10-3 Key PCB

COMPONENT SIDE



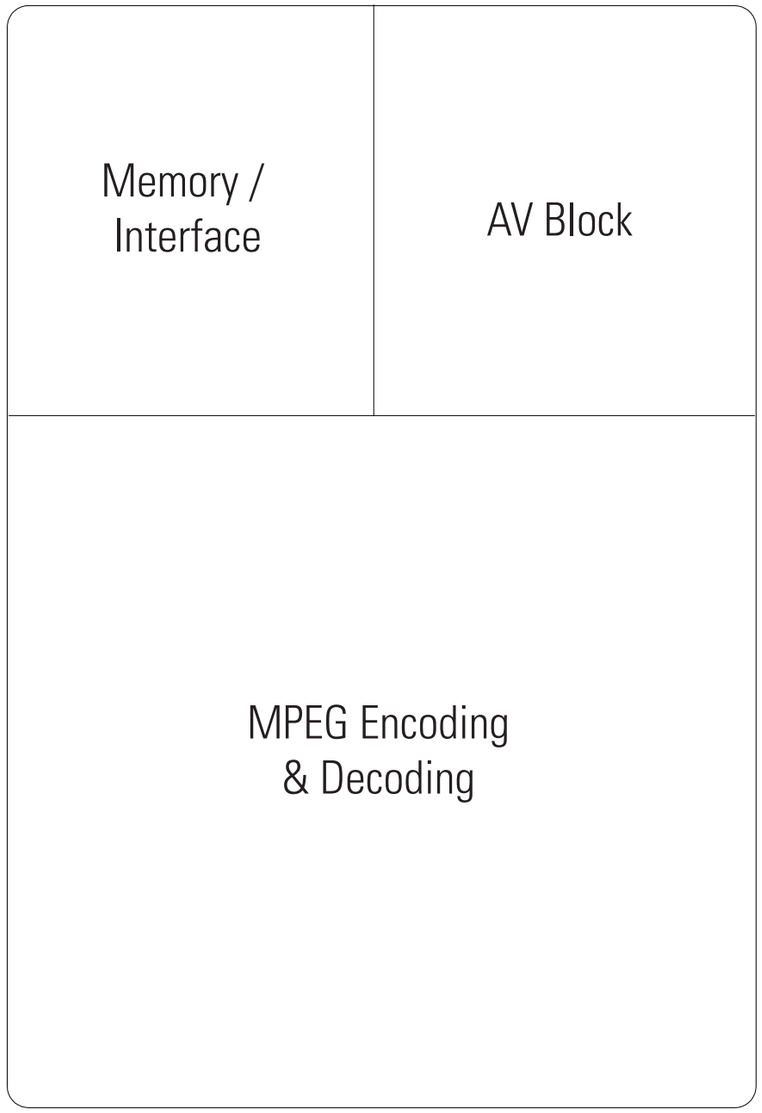
CONDUCTOR SIDE



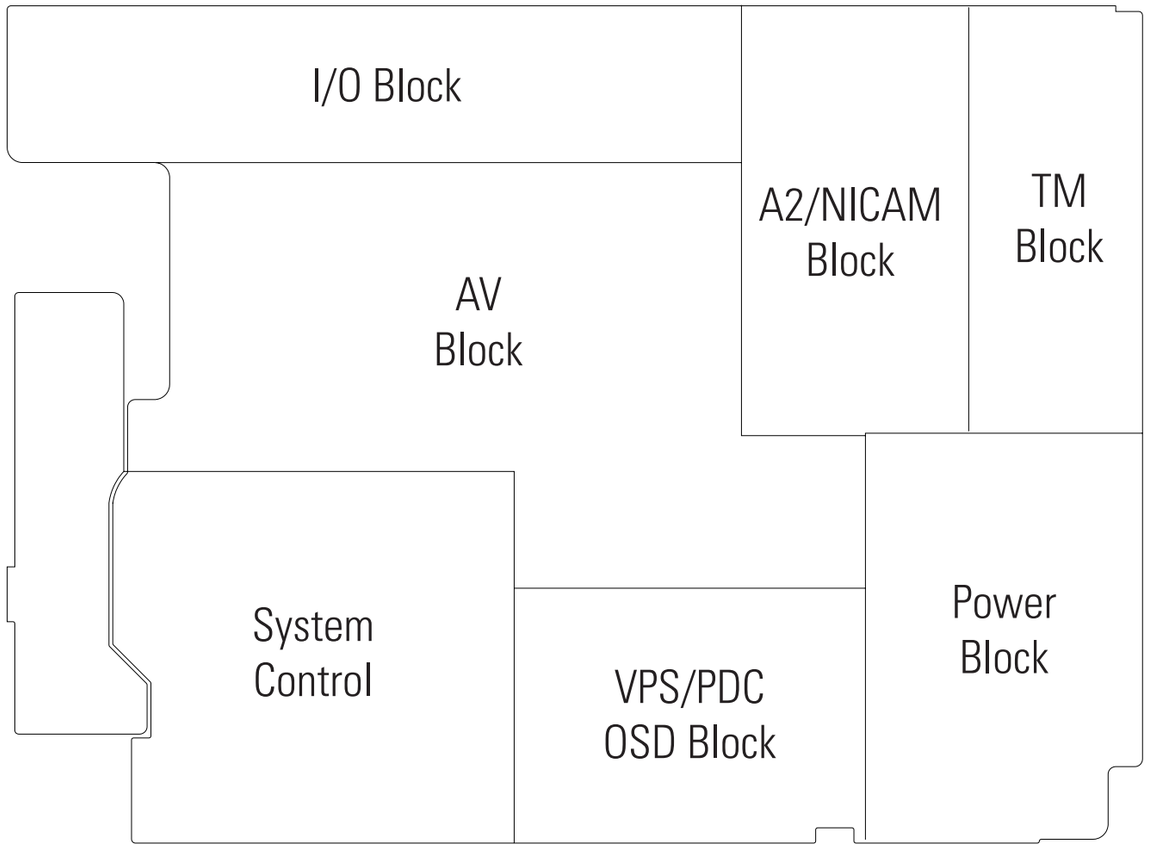
11 Schematic Diagrams

11-1 S.M.P.S. (Jack PCB) - - -

◆ Block Identification of Main PCB



- Main PCB

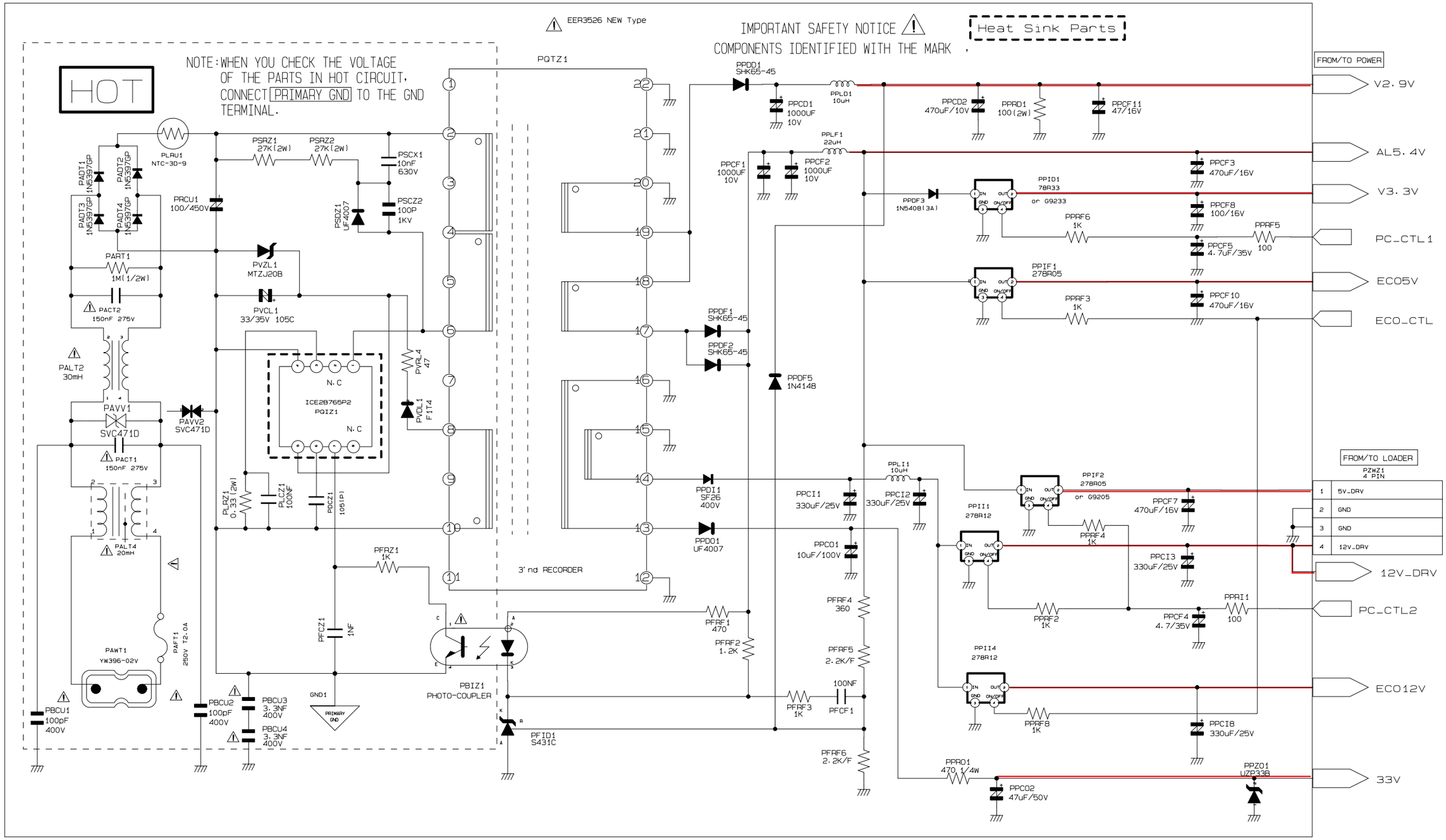


- Jack PCB

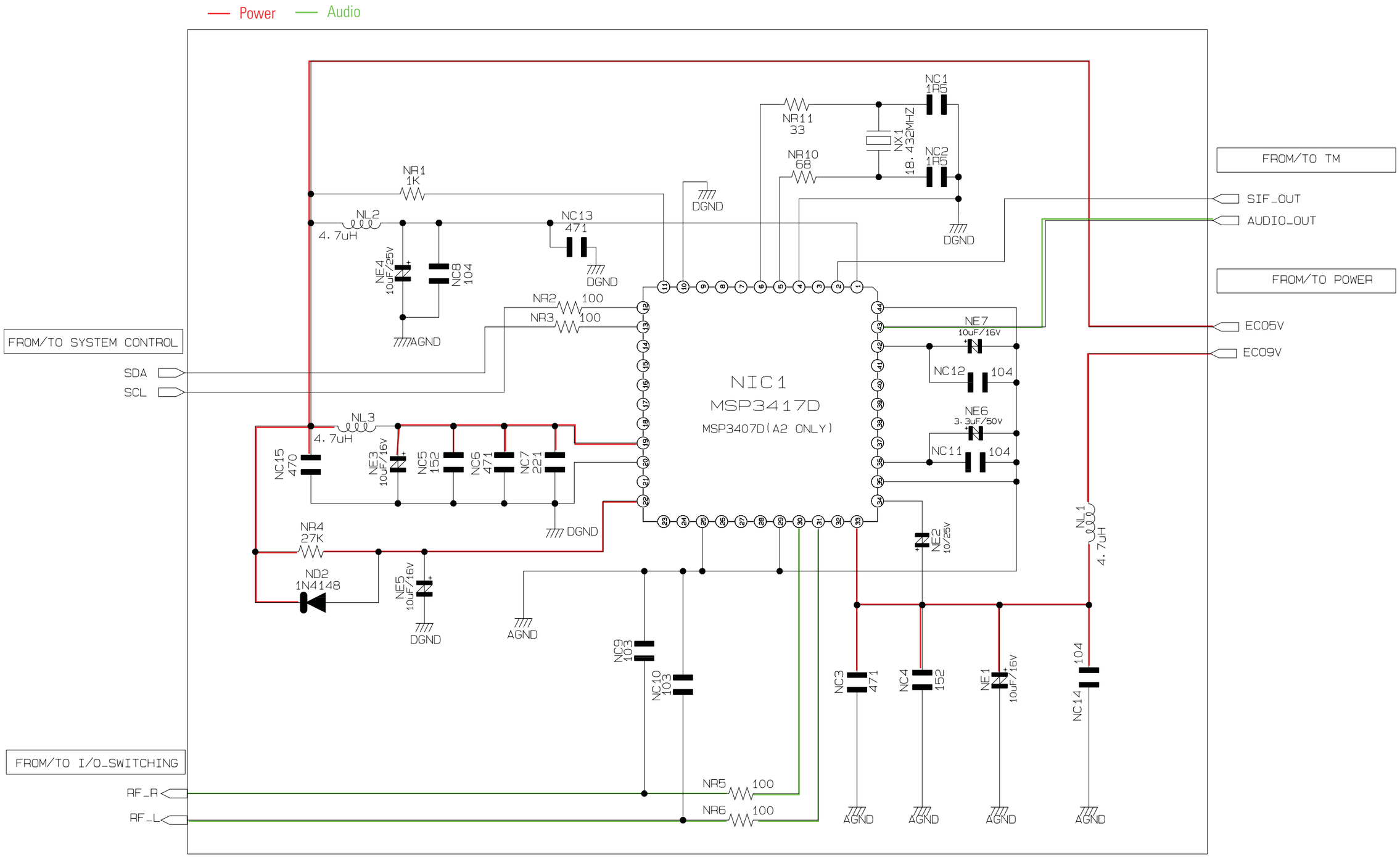
This Document can not be used without Samsung's authorization.

11-1 S.M.P.S. (Jack PCB)

— Power

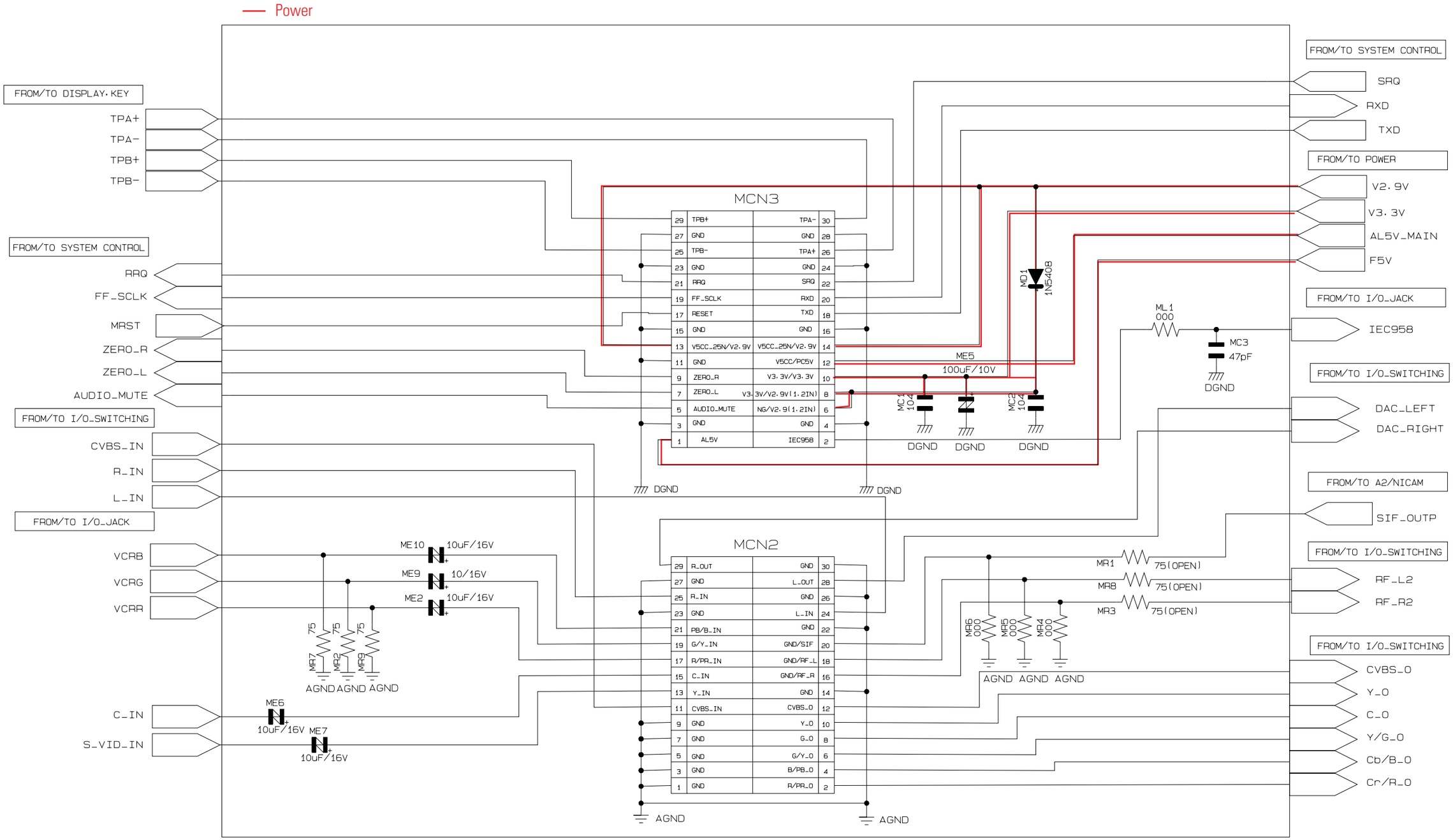


11-2 A2 / NICAM (Jack PCB)

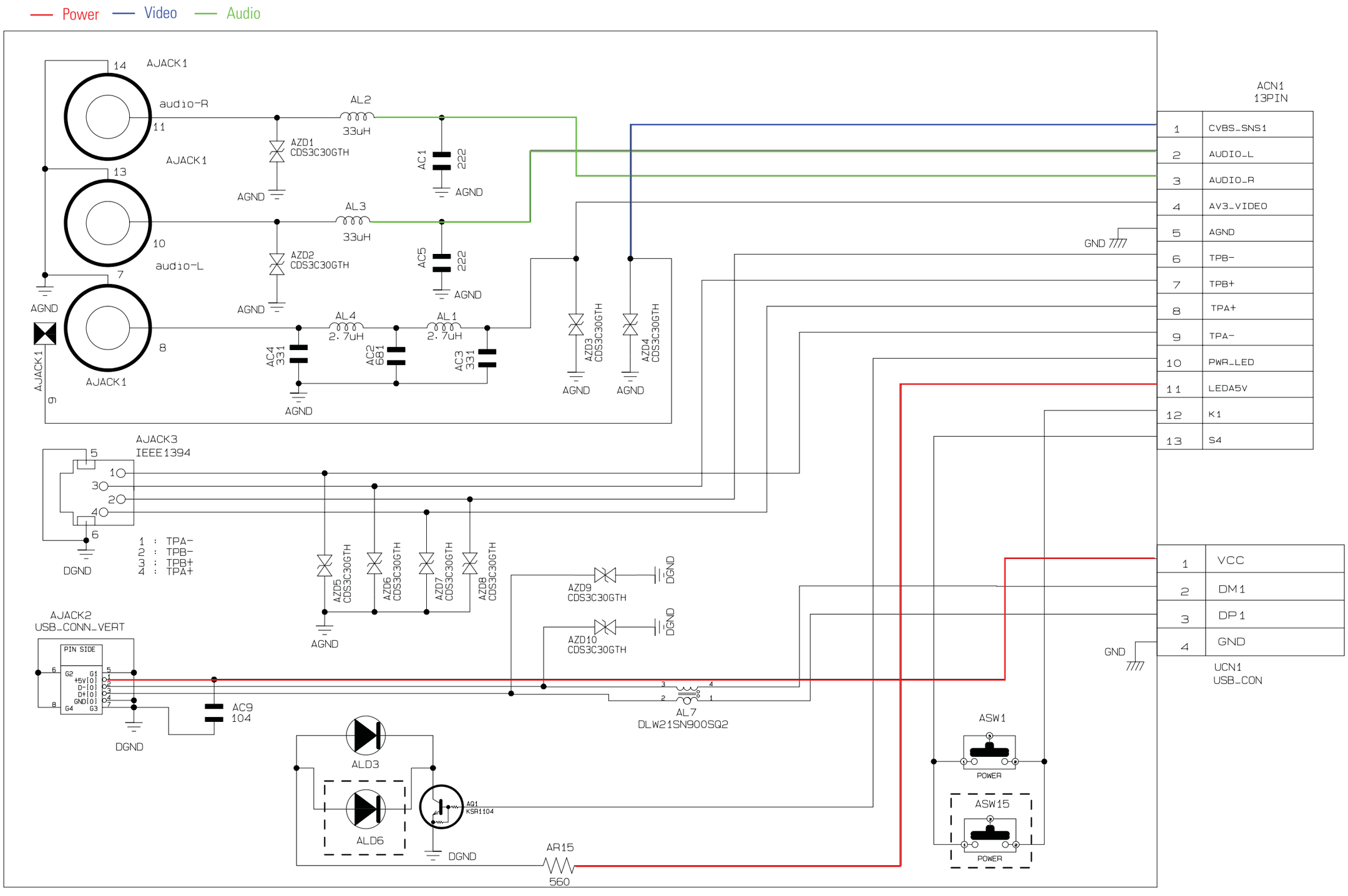


This Document can not be used without Samsung's authorization.

11-3 Connection (Jcak PCB)

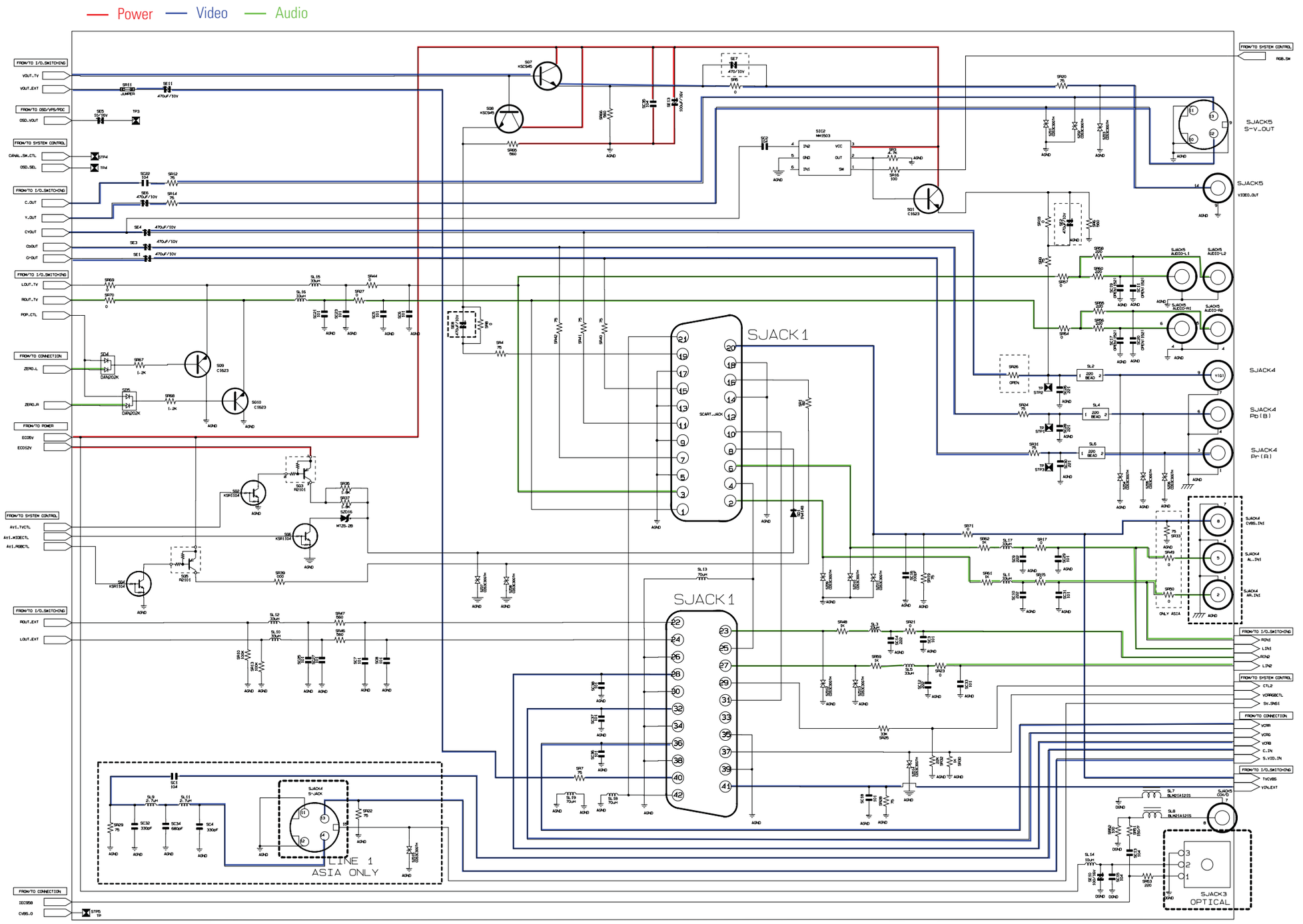


11-4 Front AV (Jack PCB)



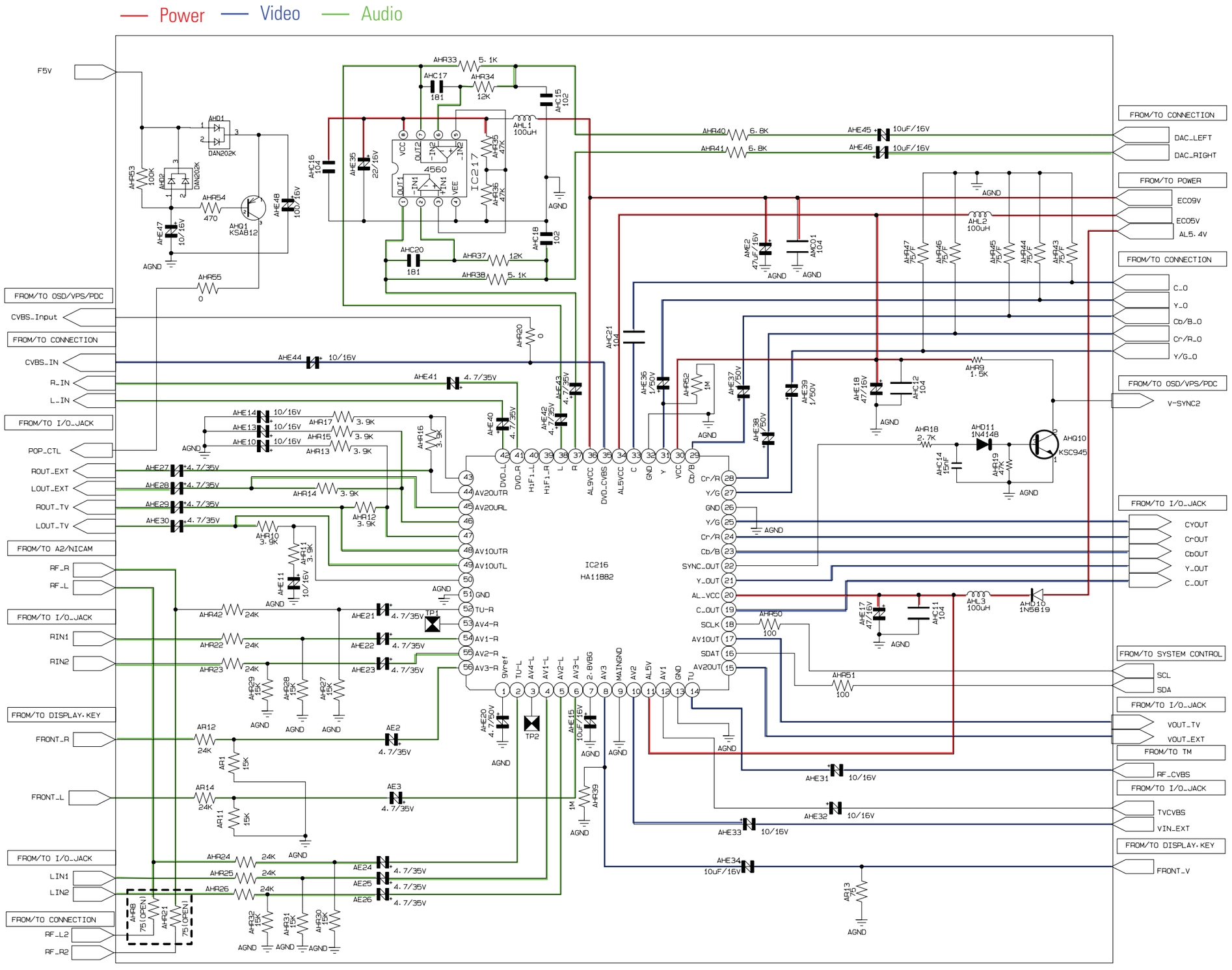
This Document can not be used without Samsung's authorization.

11-5 I/O (Jack PCB)

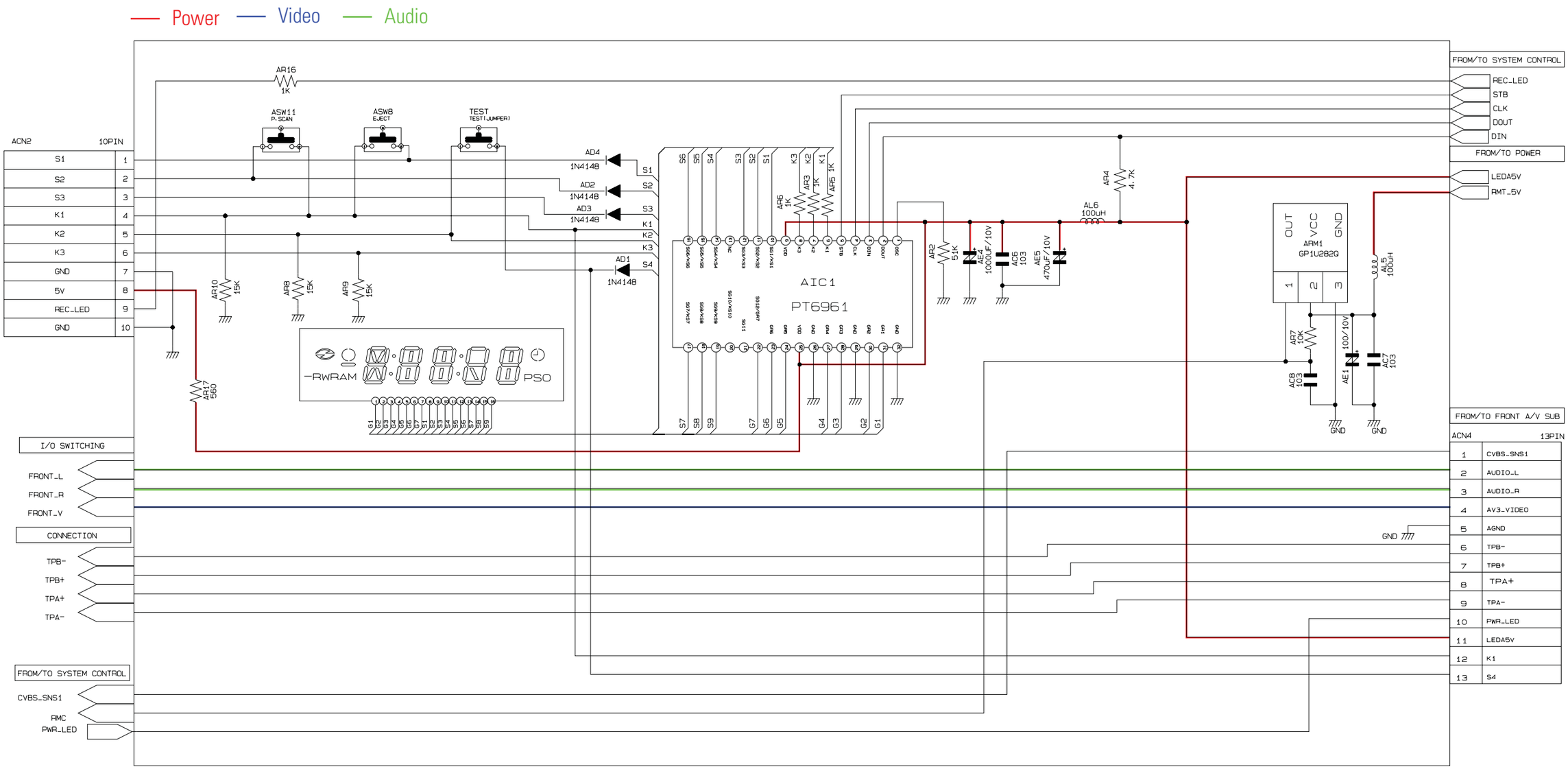


This Document can not be used without Samsung's authorization.

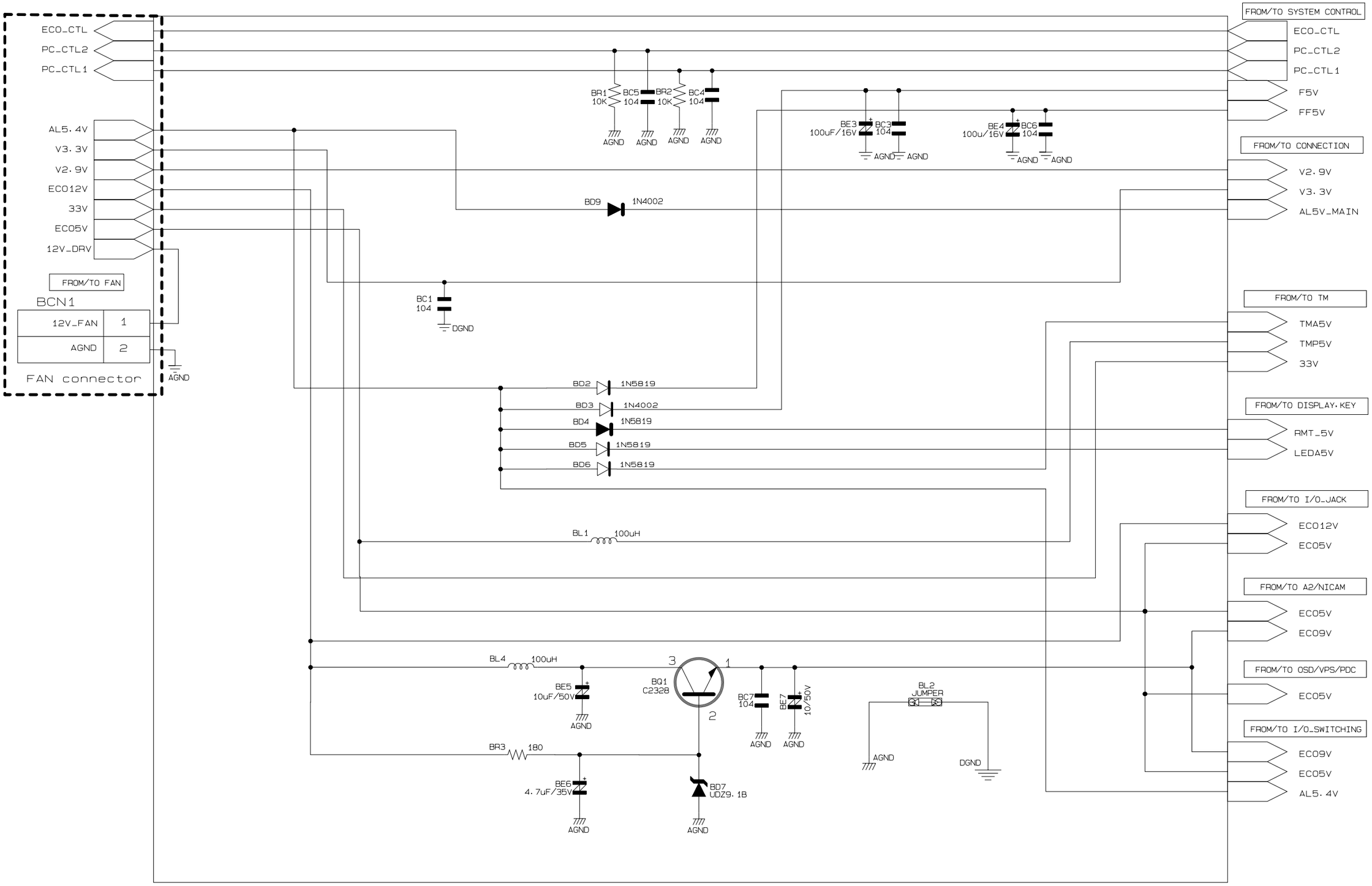
11-6 I/O Switching (Jack PCB)



11-7 LED Driver (Jack PCB)

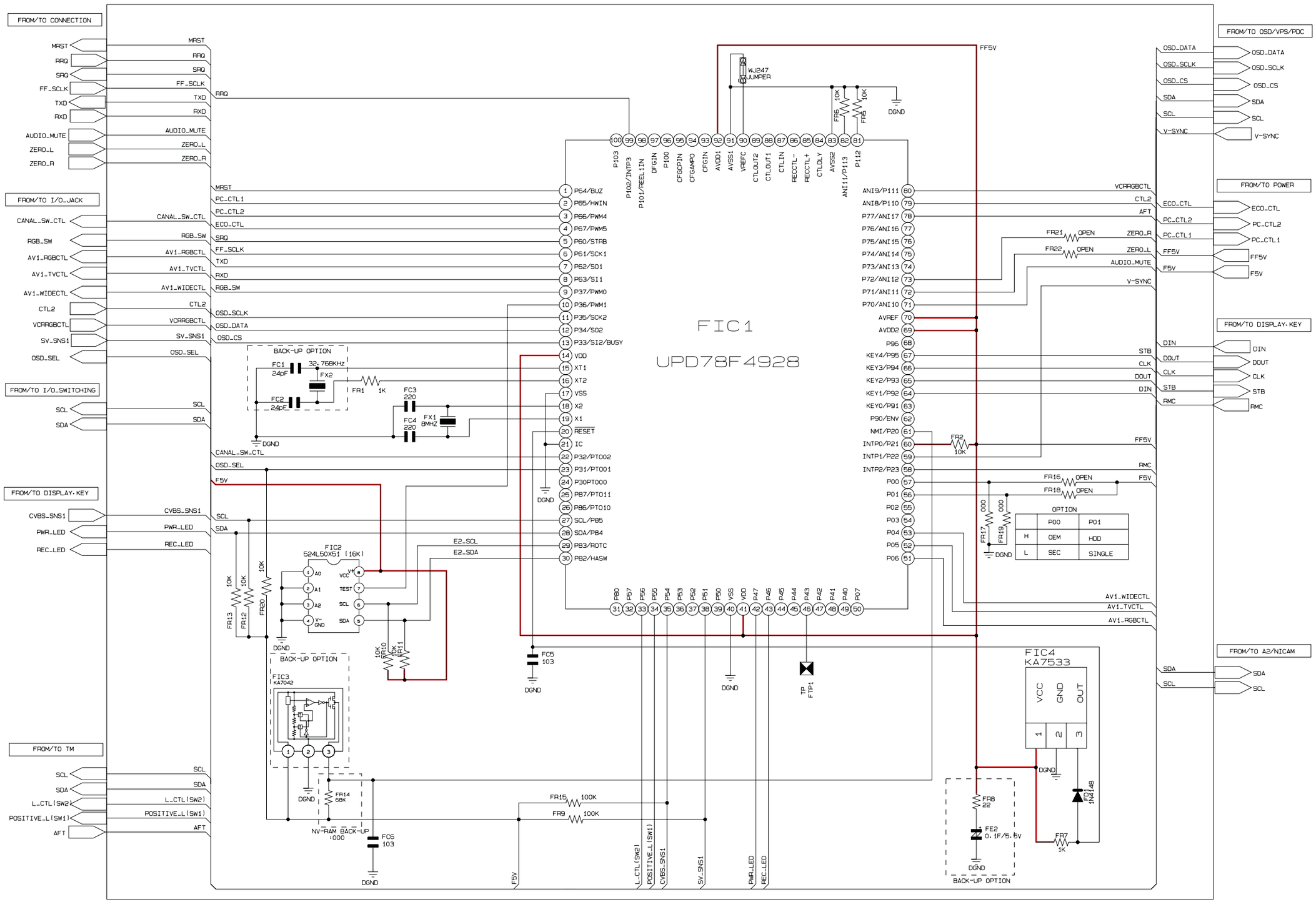


11-8 Power (Jack PCB)

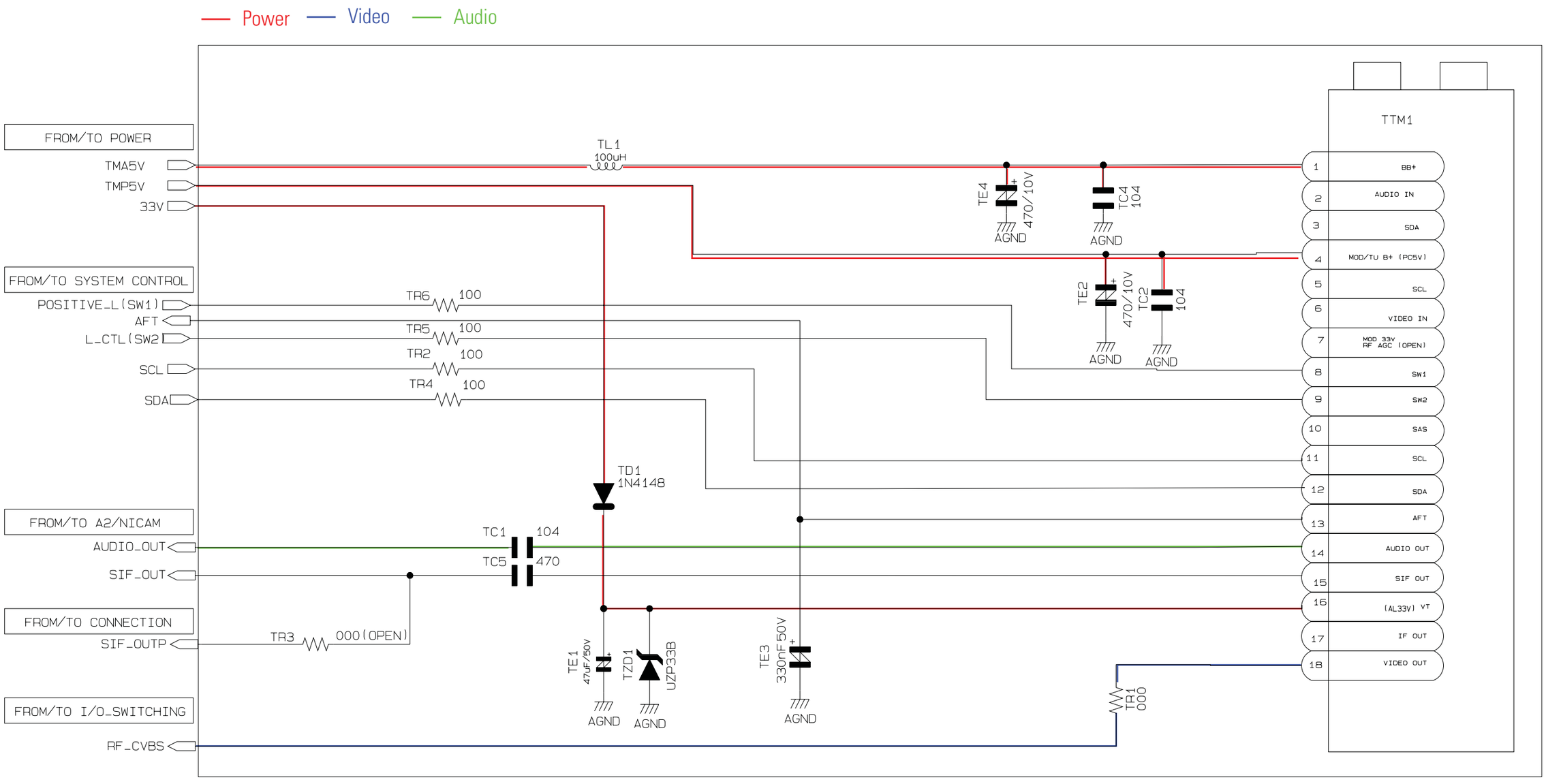


11-9 System Control (Jack PCB)

— Power

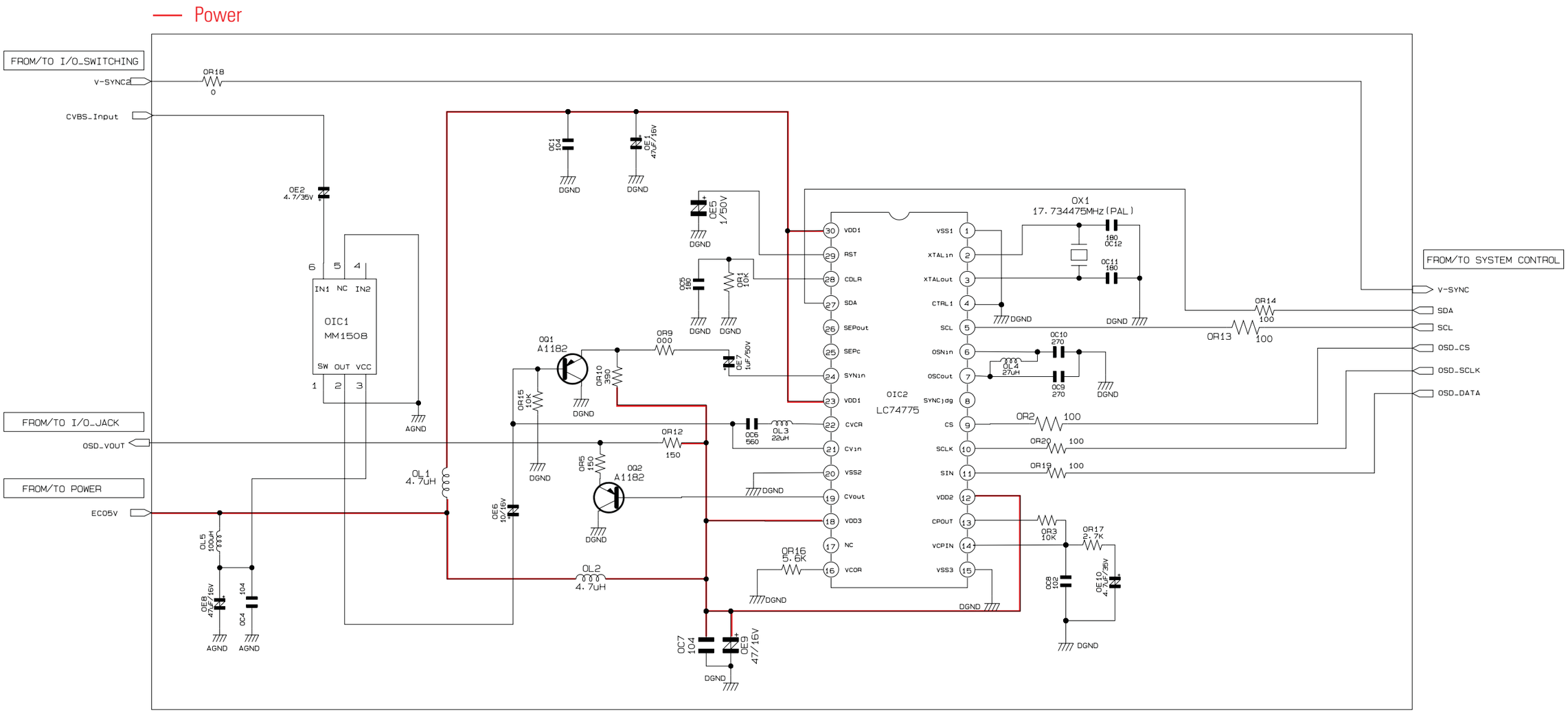


11-10 TM (Jack PCB)

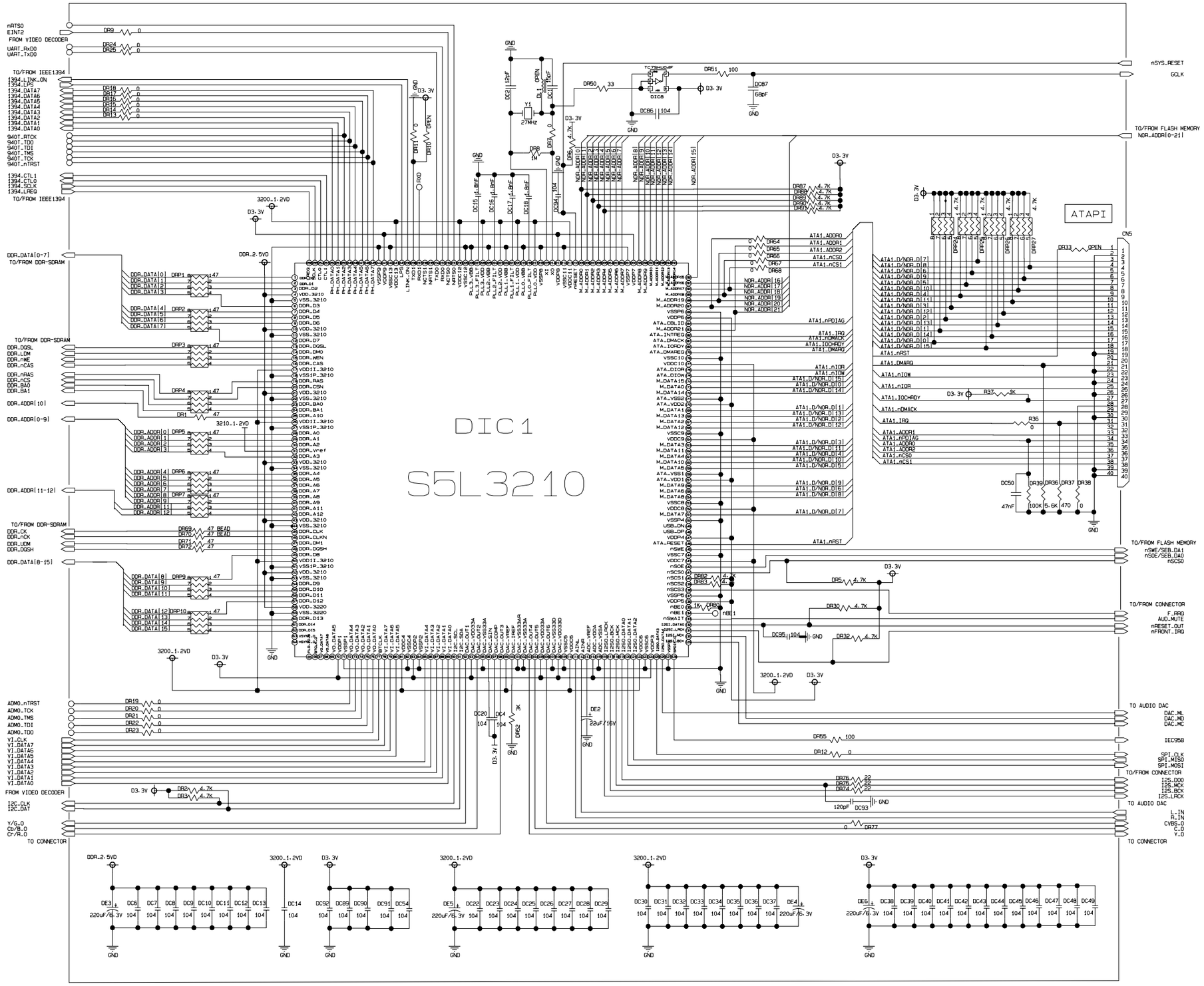


This Document can not be used without Samsung's authorization.

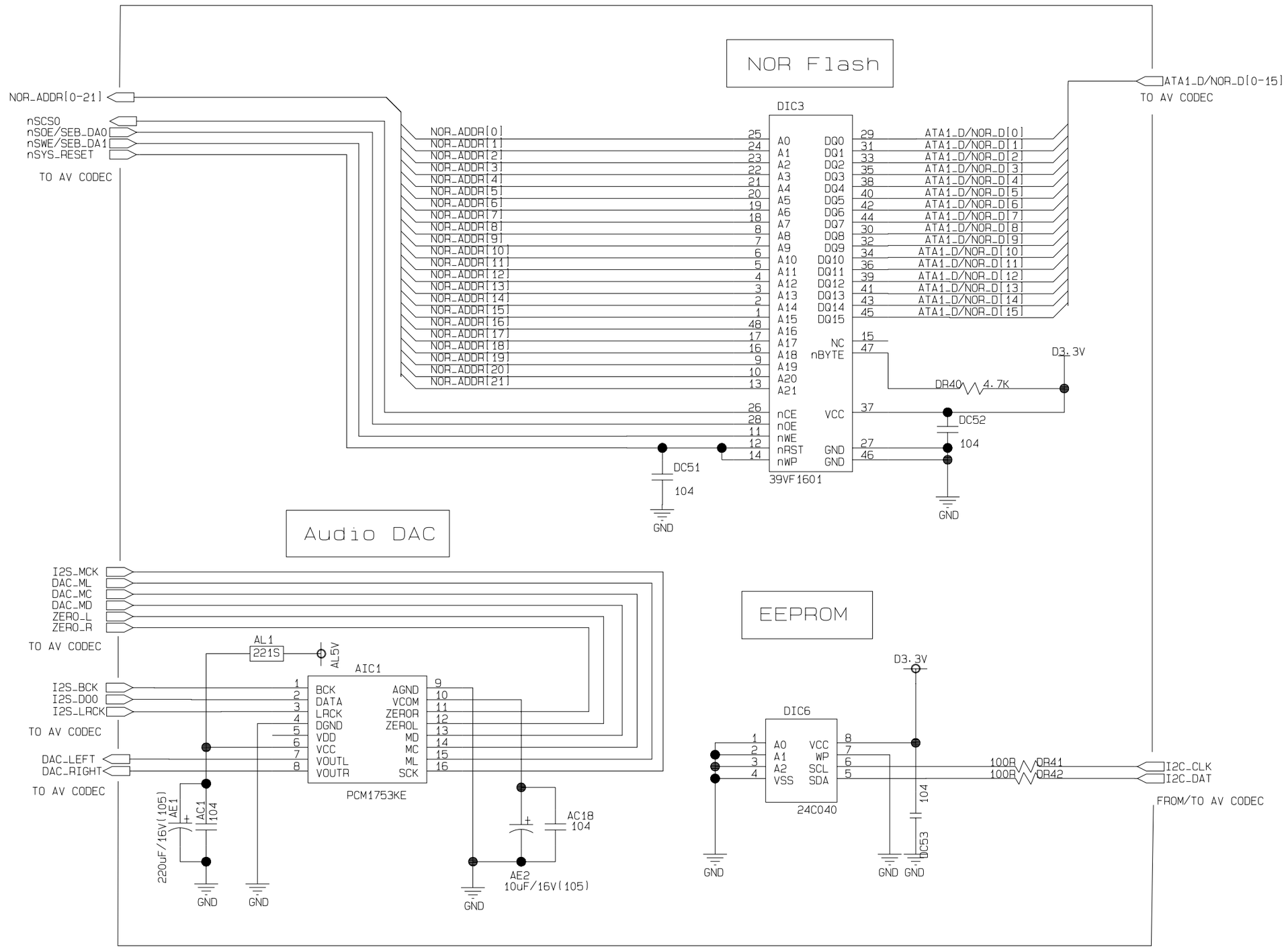
11-11 VPS_PDC (Jack PCB)



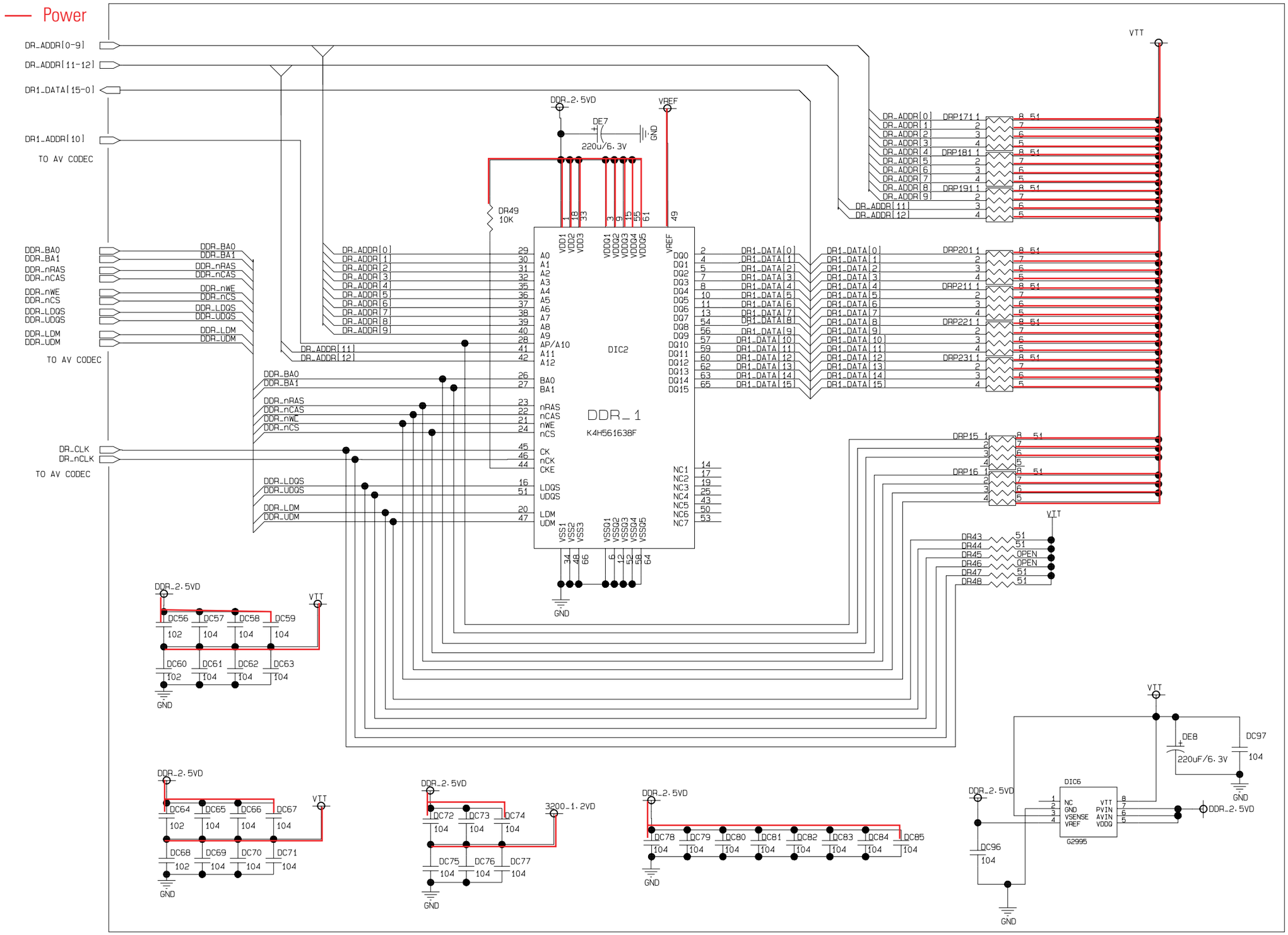
11-12 DVD AV Codec (Main PCB)



11-13 DVD Audio In/Out (Main PCB)

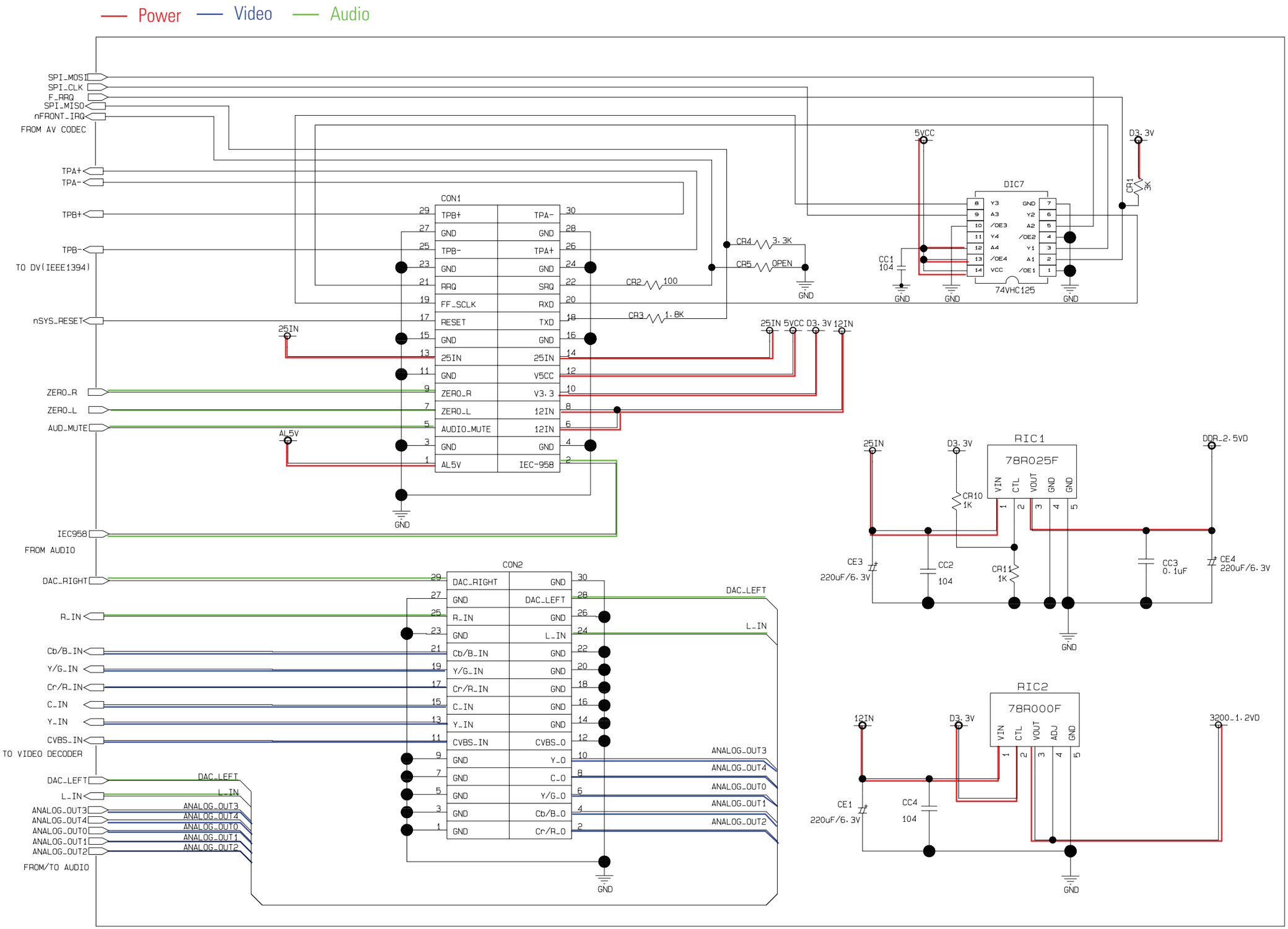


11-14 DVD DDR (Main PCB)

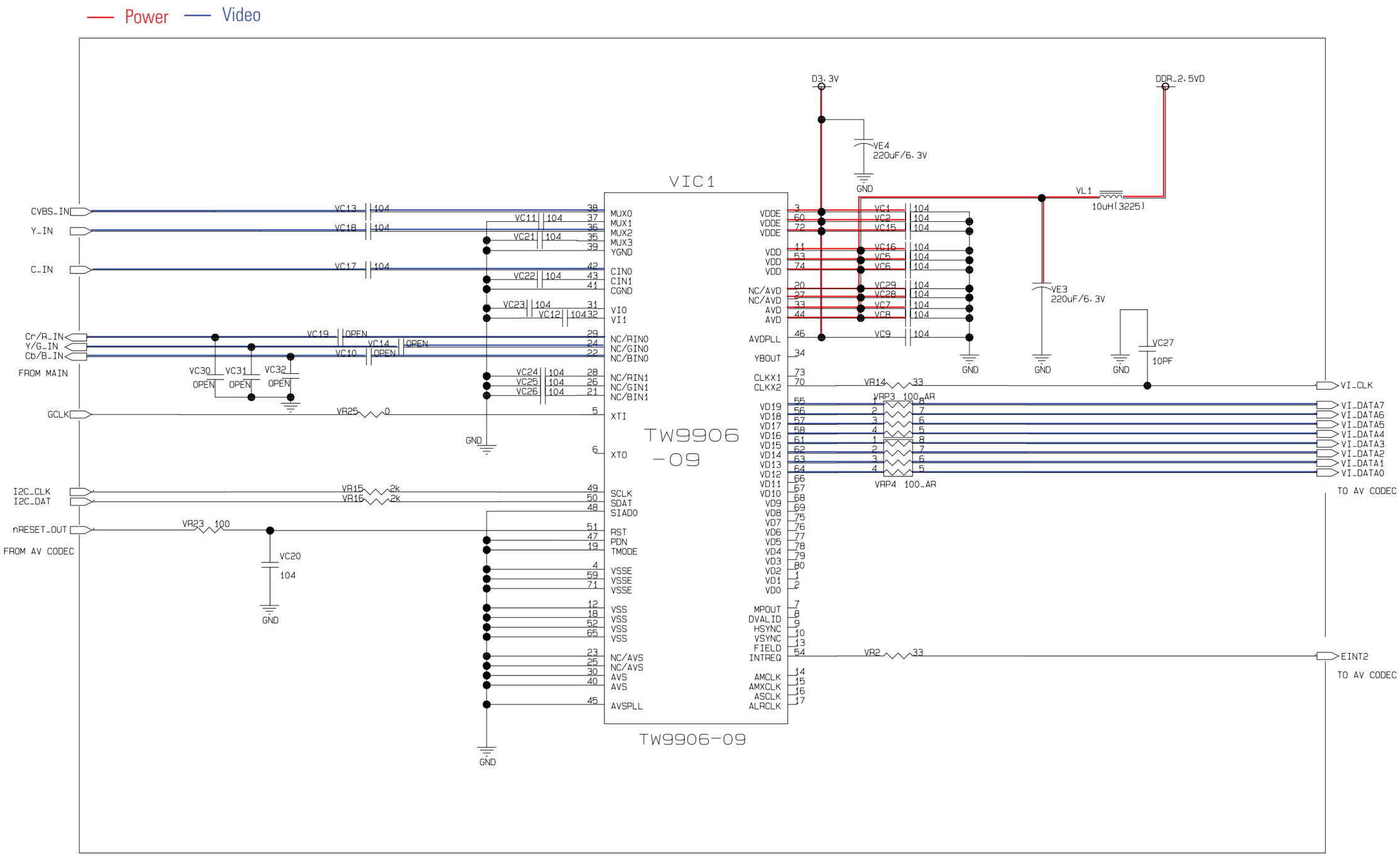


This Document can not be used without Samsung's authorization.

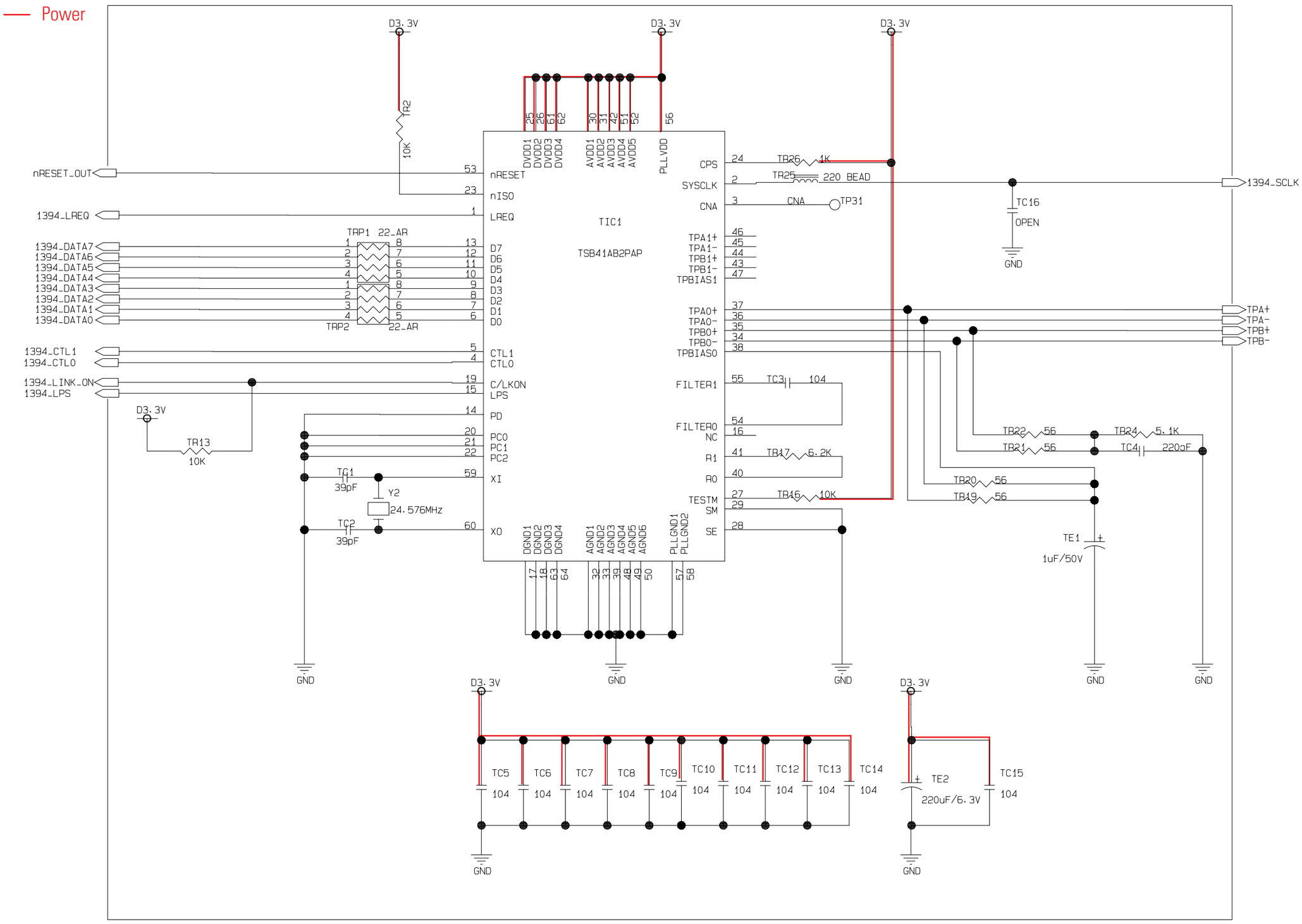
11-15 DVD Main Connector (Main PCB)



11-16 DVD Video Deocder (Main PCB)

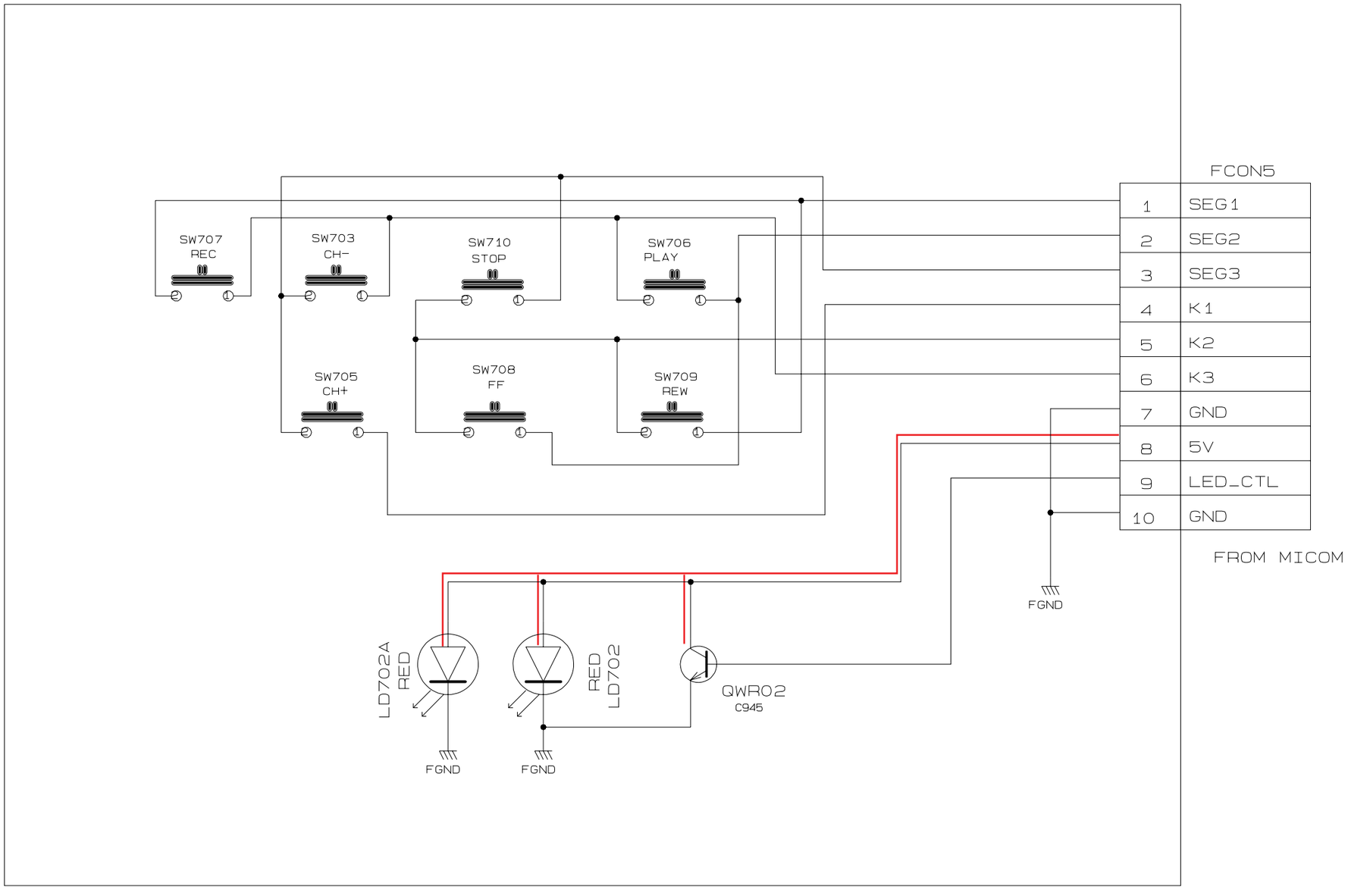


11-17 IEEE 1394 (Main PCB)



11-18 Key (Key PCB)

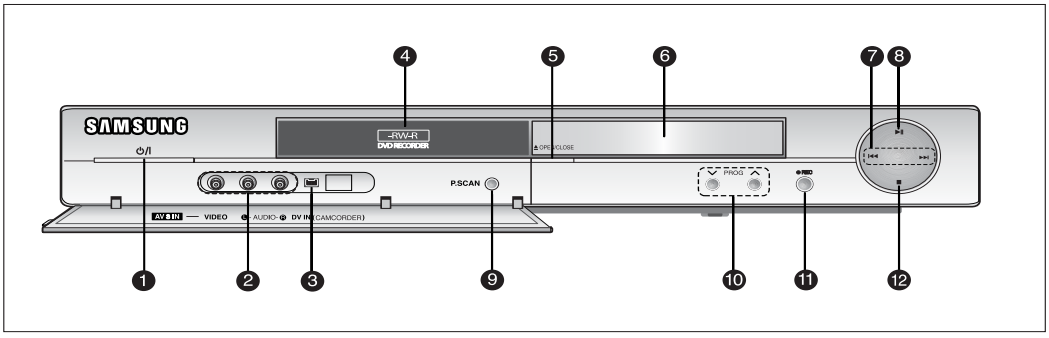
— Power



This Document can not be used without Samsung's authorization.

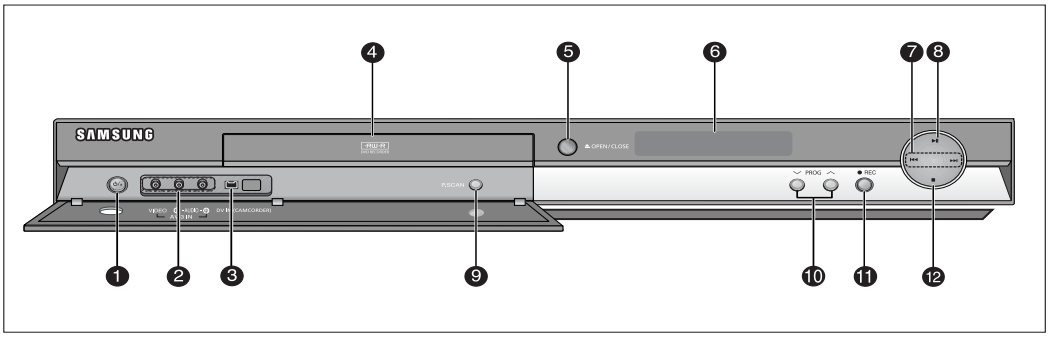
12. Operating Instructions

Front Panel (DVD-R130)



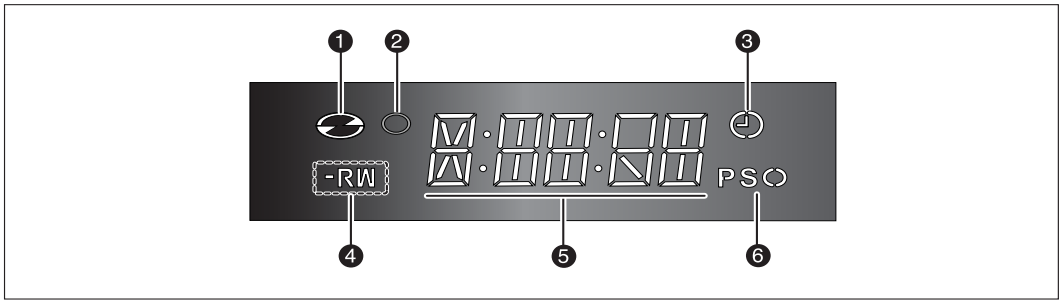
1. **STANDBY/ON**
   Turns the DVD Recorder on and off.
2. **AV3 IN**
   Connect external equipment.
3. **DV-IN**
   Connects extermal digital equipment with a DV jack. (such as a camcorder)
4. **DISC TRAY**
   Opens to accept a disc.
5. **OPEN/CLOSE**
   Opens and closes the disc tray.
6. **DISPLAY**
   Displays the playing status, title/chapter/time, etc.
7. **SEARCH/SKIP**
   Go to the next title/chapter/track or go back to the previous title/chapter/track.
8. **PLAY/PAUSE**
   Plays a disc or pauses playback/recording.
9. **P.SCAN**
   Selects the progressive scan mode.
10. **PROG (∧∨)**
    Select TV preset Channels.
    Same as **PROG** button on the remote control.
11. **REC**
    Starts recording.
12. **STOP**
    Stops disc playback.

Front Panel (DVD-R131)



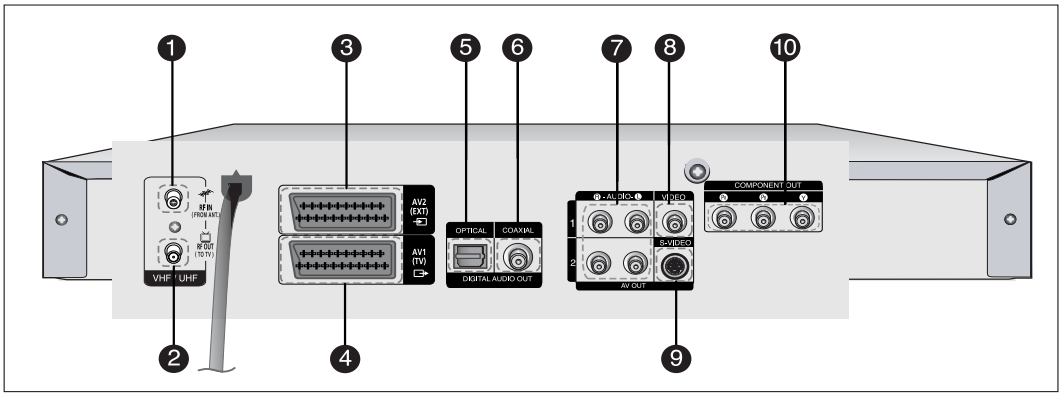
1. **STANDBY/ON**
   Turns the DVD Recorder on and off.
2. **AV3 IN**
   Connect external equipment.
3. **DV-IN**
   Connects extermal digital equipment with a DV jack. (such as a camcorder)
4. **DISC TRAY**
   Opens to accept a disc.
5. **OPEN/CLOSE**
   Opens and closes the disc tray.
6. **DISPLAY**
   Displays the playing status, title/chapter/time, etc.
7. **SEARCH/SKIP**
   Go to the next title/chapter/track or go back to the previous title/chapter/track.
8. **PLAY/PAUSE**
   Plays a disc or pauses playback/recording.
9. **P.SCAN**
   Selects the progressive scan mode.
10. **PROG (∧∨)**
    Select TV preset Channels.
    Same as **PROG** button on the remote control.
11. **REC**
    Starts recording.
12. **STOP**
    Stops disc playback.

Front Panel Display



1. Lights when a disc is loaded.
2. Lights in the record mode.
3. Lights to indicate the timer record mode.
4. Lights when a DVD-R/-RW disc is loaded.
5. Playing time/clock/current status indicator.
6. Lights in the progressive scan mode.

Rear Panel



1. In from aerial connector

2. Out to TV connector

3. AV2(EXT) INPUT SCART Connector

4. AV1(TV) OUTPUT SCART Connector

5. DIGITAL AUDIO OUT(OPTICAL)

Connects to an amplifier having a digital optical audio input jack.

6. DIGITAL AUDIO OUT(COAXIAL)

Connects to an amplifier having a digital coaxial audio input jack.

7. AUDIO OUT

Connects to the audio input of external equipment using audio cables.

8. VIDEO OUT

Connects the input of external equipment using a Video cable.

9. S-VIDEO OUT

Connects the input of external equipment using an S-Video cable.

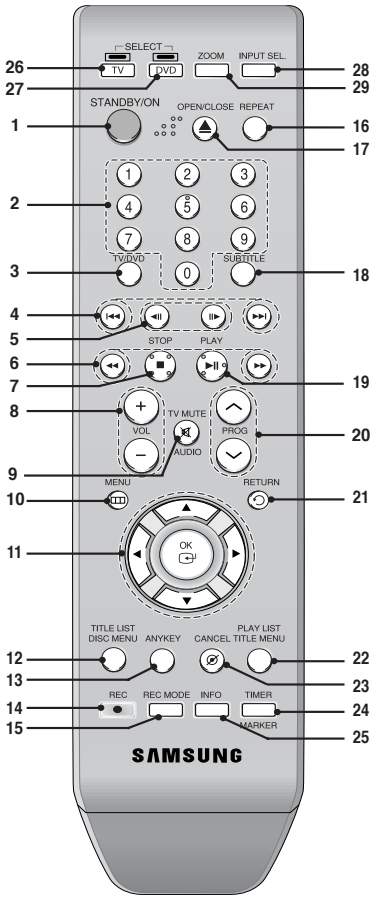
10. COMPONENT VIDEO OUT

Connects to equipment having Component video output.

NOTE

- The Antenna connection does not pass output signal of DVD. To watch a DVD on your TV, you must connect audio/video cables.

Tour of the Remote Control



1. **STANDBY/ON Button**
2. **0~9(Number) Buttons**
3. **TV/DVD Button**
4. **Reverse/Forward Skip Buttons**
   Press to skip a disc backwards or forwards.
5. **Reverse/Forward Step Buttons**
   Press to play frame by frame.
6. **Reverse/Forward Search Buttons**
   Press to search a disc backwards or forwards.
7. **STOP Button**
   Press to stop a disc.
8. **VOL Buttons**
   Volume adjustments.
9. **AUDIO/TV MUTE Button**
   Use this to access various audio functions on a disc.(DVD mode)
   This operates as Sound Mute. (TV mode)
10. **MENU Button**
    Brings up the DVD recorder's setup menu.
11. **OK/DIRECTION(▲▼◄►) Buttons**
12. **TITLE LIST/DISC MENU Button**
    Use this to enter the View Recording list/Disc menu.
13. **ANYKEY Button**
    Use this to view the status of the disc that is being played.
14. **REC Button**
    Use to make a recording on DVD-RW/-R discs.
15. **REC MODE Button**
    This will display the recording status.(XP/SP/LP/EP)
16. **REPEAT Button**
    Allows you to repeat a title, chapter, track or disc.
17. **OPEN/CLOSE Button**
    To open and close the disc tray.
18. **SUBTITLE Button**
    Press this to switch the DVD's subtitle language.
19. **PLAY/PAUSE Button**
    Press to play a disc or pause playback/recording.
20. **PROG Buttons**
    Select preset channels in a specific order.
    Same as PROG buttons in front panel.
21. **RETURN Button**
    Returns to a previous menu.
22. **PLAY LIST/TITLE MENU Button**
    Use this to return to the Title menu, or to view the recorded files list.
23. **CANCEL Button**
24. **MARKER/TIMER Button**
    Use this to bookmark a position while playing a disc.
    Press to directly enter the Timer Recording Mode menu while stopping a disc.
25. **INFO Button**
    This will display current settings or disc status.
26. **TV Button**
    Press this to operate TV.
27. **DVD Button**
    Press this when you use a DVD recorder.
28. **INPUT SEL. Button**
    Select line input signal in external input mode [PROG, AV input or DV INPUT(DVD-R130, R131 only)]
29. **ZOOM Button**
    Press this to enlarge the screen.

Connecting & Setting Up

This section involves various methods of connecting the DVD Recorder to other external components and required initial setting modes.

Quick Overview.....17
Connecting the DVD Recorder.....18
Additional connections 18
Other type of connecting the Video output cable.....19
Other type of connecting the Audio output cable.....21
Connecting to AV3 IN, DV input jack (DVD-R130, R131 only).....23

Quick Overview

A Quick Overview presented in this guide will give you enough information to start using the DVD Recorder.

Connecting the DVD Recoder

▼

Additional connections

▼

Other type of connecting the Video output cable

▼

Other type of connecting the Audio output cable

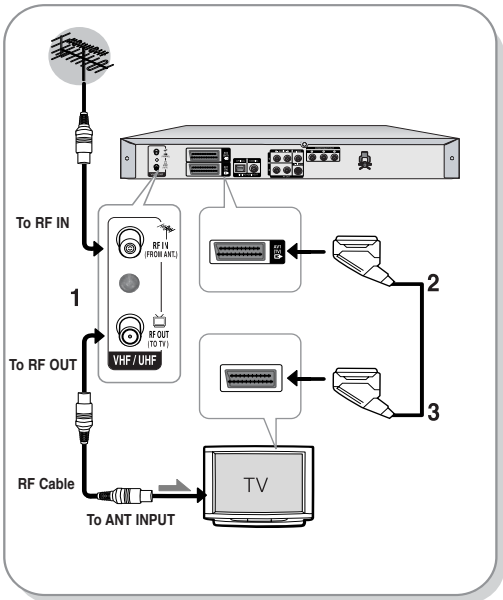
▼

Connecting to AV3 IN, DV input jack (DVD-R130, R131 only)

Connecting the DVD Recorder

You can connect your DVD Recorder to the television using the SCART cable if the appropriate input is available on the television.

1. Connect the RF cable as shown.
2. Connect one end of the SCART cable to the AV1 socket on the rear of the DVD Recorder.
3. Plug the other end into the appropriate connector on the television.
4. Plug in the DVD Recorder and TV
5. Turn on the DVD Recorder and TV.
6. Press the **INPUT SEL.** button on your TV remote control until the Video signal from the DVD Recorder appears on the TV screen.

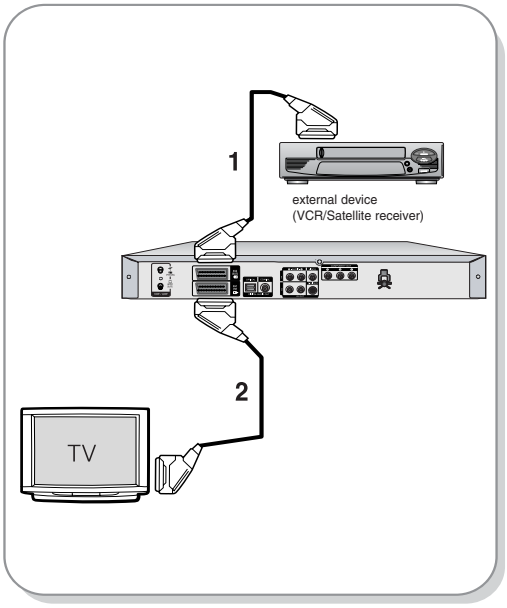


NOTE

- The RF cable connection of this DVD Recorder sends only signals of TV. You must connect SCART cable or Audio/Video cables to watch a signal from your DVD Recorder.
- TV mode
  Press the TV/DVD button on remote control, then “TV” appear on Front LED display (or turn off DVD Recorder).

Additional connections

You can connect your DVD Recorder to a satellite or digital tuner.



- DVD mode

1. Connect the AV2 connector of DVD Recorder and VCR/Satellite receiver or digital tuner using a SCART cable.
2. Connect the AV1 connector to the SCART AV connector on TV.
3. Turn on the DVD Recorder, VCR/Satellite receiver or digital tuner and TV.
4. Set Input mode on AV2.

- TV mode

1. Press the TV/DVD button on remote control,then “TV” appear on Front LED display. (or turn off DVD Recorder.)
2. You can watch programmes from a satellite or digital tuner connected to this DVD Recorder, even when the DVD Recorder is turned off.

Other type of connecting the Video output cable

There are several ways to output video signal not using scart cables. Select one of the following video connecting that best suits you below.

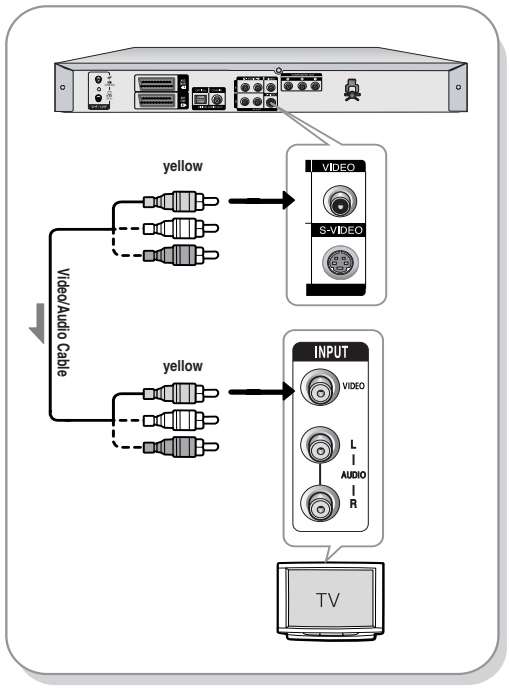
- **Case 1 :** Connecting to a Video (Composite) output jack
- **Case 2 :** Connecting to an S-Video output jack
- **Case 3 :** Component Video output jacks

S-Video, Component video and Progressive Output Modes

- S-Video and Component video output are available only if your TV supports S-Video input or Component video input, respectively. If S-Video or Component video output does not work, check the TV connections and the TV input selection settings.
- Compared to standard interlaced video, progressive scan doubles the amount of video lines fed to your TV, resulting in a more stable, flicker-free, clear image than interlaced video.
  This is only available with TVs that support progressive scan.
- Progressive Scan Output (576p)
  Consumers should note that not all high definition television sets are fully compatible with this DVD Recorder and may cause artifacts to be displayed in the picture, in case of 576 progressive scan picture problems, It is recommended that the user switch the connection to the 'standard definition' output. If there are questions regarding our TV set compatibility with this model 576p DVD Recorder, please contact our customer service centre.

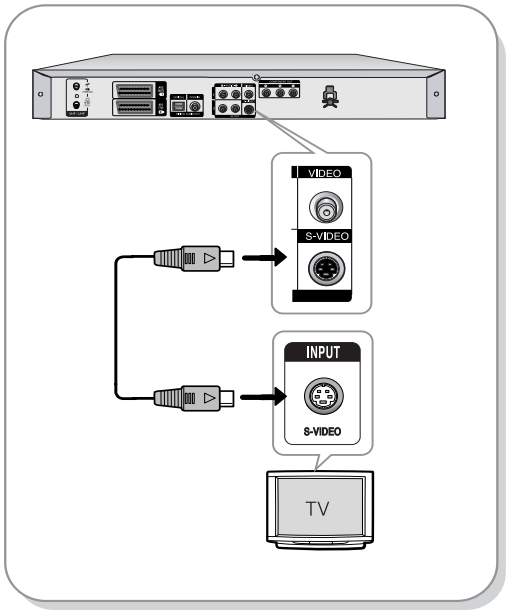
Case 1 : Connecting to a Video (Composite) output jack

1. Connect a video(yellow) cable between the VIDEO (yellow) OUT jack on DVD Recorder and VIDEO (yellow) INPUT jack on your TV (or AV amplifier).
   • You will enjoy regular quality images.
2. Connect audio cables (white and red) between the AUDIO OUT jacks on the DVD Recorder and AUDIO IN jacks on TV (or AV amplifier).
   (See pages 21-22)



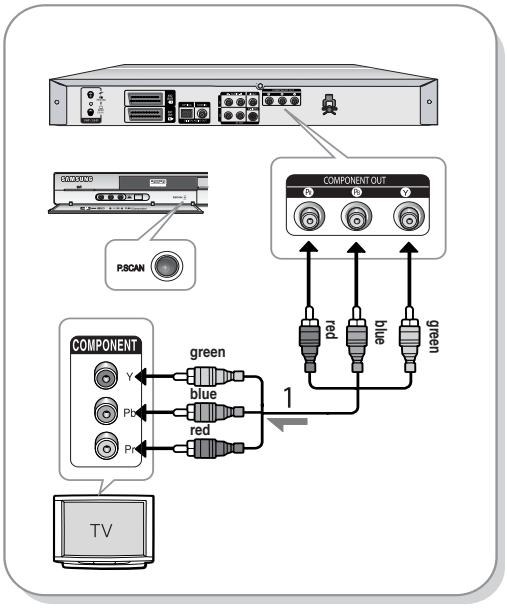
Case 2 : Connecting to an S-Video output jack

1. Connect an S-Video cable (not included) between the S-VIDEO OUT jack on DVD Recorder and S-VIDEO INPUT jack on your TV (or AV amplifier).
2. Connect audio cables (white and red) between the AUDIO OUT jacks on DVD Recorder and AUDIO IN jacks on TV (or AV amplifier).
   - You will enjoy high quality images.



Case 3 : Component Video output jacks

1. Connect Component video cables(not supplied) between the COMPONENT OUT(Y,P_B,P_R) jacks on DVD Recorder and COMPONENT IN(Y,P_B,P_R) jacks on your TV.
2. Connect audio cables (white and red) between the AUDIO OUT jacks on the DVD Recorder and AUDIO IN jacks on TV (or AV amplifier). (See pages 21-22).
3. After connecting, refer to the page 34 to 35.
   - You will enjoy high quality and accurate colour reproduction images.



NOTE

- Make sure that the colour coded connections match. The Y, P_B, P_R component output jacks of your DVD Recorder must be connected to the exact corresponding component input jacks on your TV.
- Progressive setting is only available when the Video Out is set to Component. (See page 34)

Other type of connecting the Audio output cable

There are several ways to output audio signal not using scart cables. Select the audio connection that best suits you below.

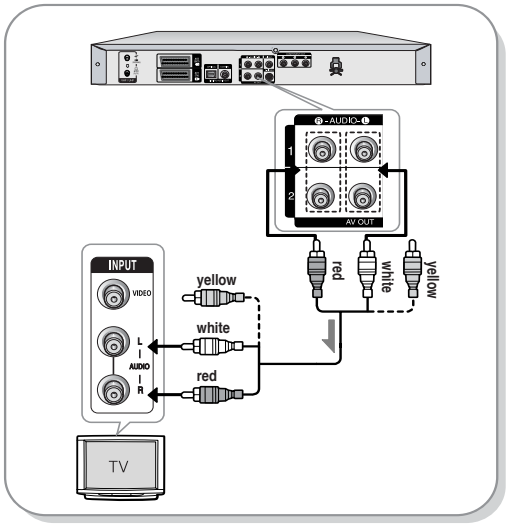
- **Case 1 :** Connecting to your TV
- **Case 2 :** Connecting to a stereo amplifier with AV output jacks
- **Case 3 :** Connecting to an AV amplifier with a digital output jack

Manufactured under licence from Dolby Laboratories. “Dolby” and the double-D symbol are trademarks of Dolby Laboratories.

“DTS” and “DTS Digital Out” are trademarks of DTS, Inc.

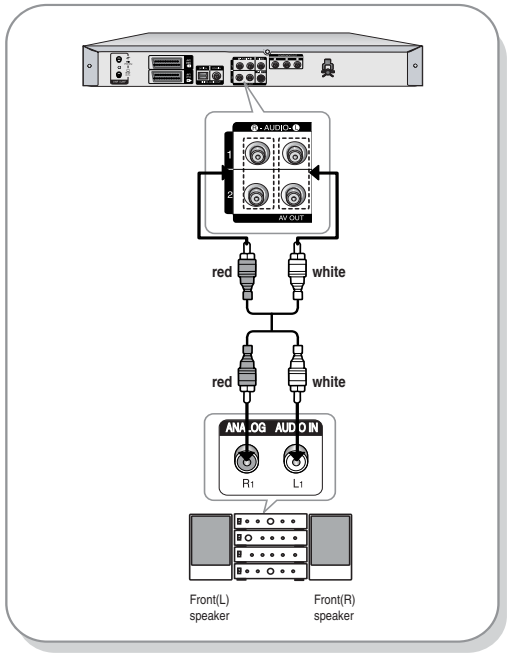
Case 1 : Connecting to your TV

If your TV has audio input jacks, use this connection.



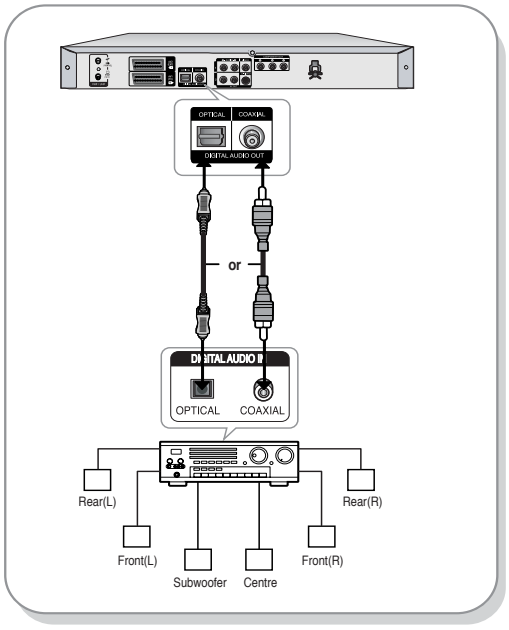
Case 2 : Connecting to a stereo amplifier with AV output jacks

If your stereo amplifier only has AUDIO INPUT jacks(L and R), use the AUDIO OUT jacks.



Case 3: Connecting to an AV amplifier with a digital output jack

If your AV amplifier has a Dolby Digital, MPEG2 or DTS decoder and a digital input jack, use this connection. To enjoy Dolby Digital, MPEG2 or DTS sound, you will need to set up the audio settings. (See pages 32-33)



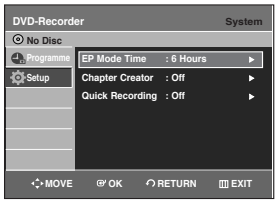
Quick Recording Setting

If this function is set to on, both the DVD Recorder and the TV will power on at the same time, which enables you to immediiatedly record a desired channel.

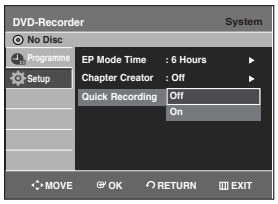
1 With the DVD Recorder in Stop mode/No Disc mode, press the **MENU** button.

2 Press the ▲▼ buttons to select **Setup**, then press the **OK** or ► button.

3 Press the ▲▼ buttons to select **System**, then press the **OK** or ► button.
System menu will be displayed.



4 Press the ▲▼ buttons to select **Quick Recording**, then press the **OK** or ► button.



5 Press the ▲▼ buttons to select **On,** then press the **OK** or ► button.

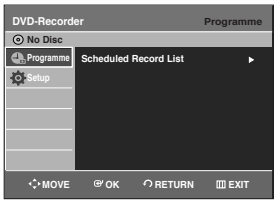
DivX(R) Registration

Please use the Registration code to register this DVD Recorder with the DivX(R) Video On Demand format.
For more information, visit www.divx.com/vod

Setting up the Audio Options

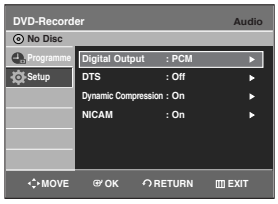
You can connect the DVD Recorder to an external amp or Home Theatre.
Allow you to setup the Audio device and sound status depending on the audio system in use.

1 With the DVD Recorder in Stop mode/No Disc mode, press the **MENU** button.

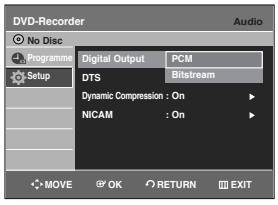


2 Press the ▲▼ buttons to select **Setup**, then press the **OK** or ► button.

3 Press the ▲▼ buttons to select **Audio**, then press the **OK** or ► button.
Audio setup menu will be displayed.



4 Press the ▲▼ buttons to select the desired audio option, then press the **OK** or ► button.



5 Press the ▲▼ buttons to select the desired item, then press the **OK** or ► button.

NOTE

- Press the **RETURN** or ◄ button to return to the previous menu.
  Press the **MENU** button to exit the menu.

Audio Options

Digital Output

1. **PCM** : Select this when you have no equipment that can decode Dolby Digital (or MPEG-2) signal. When you play Dolby Digital (or MPEG-2) sound track, the digital output are converted to PCM Stereo.
2. **Bitstream** : Output Dolby Digital (or MPEG-2) audio as bitstream. Select this when your AV receiver or AV amplifier have Dolby Digital (or MPEG-2) Decoder.

NOTE

- Digital output setting is equally applied to both Dolby Digital and MPEG-2 audio. LPCM sound track is always outputted as PCM. It has no relation with Digital Output setting.
- Be sure to select the correct Digital Output or you will hear no sound or loud noise.

DTS

1. **Off** : Doesn't output DTS signal.
   Select this when your AV receiver or AV amplifier does not have DTS decoder.
2. **On** : Outputs DTS Bitstream via digital output when you play DTS track.
   Select this only when your AV receiver (or AV amplifier) have DTS decoder.

NOTE

- When DTS soundtrack is played, sound does not output from AV Audio Output.

Dynamic Compression

This is only active when a Dolby Digital signal is detected.

1. **Off** : You can enjoy the movie with the standard Dynamic Range.
2. **On** : When Movie soundtracks are played at low volume or from smaller speakers, the system can apply appropriate compression to make low-level content more intelligible and prevent dramatic passages from getting too loud.

NICAM

NICAM programmes are divided into 3 types. NICAM Stereo, NICAM Mono and Bilingual (transmission in another language). NICAM programmes are always accompanied by a standard mono sound broadcast and you can select the desired sound by setting NICAM on or off.

1. **On** : NICAM mode
2. **Off** : Only set at this position to record the standard mono sound during a NICAM broadcast if the stereo sound is distorted due to inferior reception conditions.

MEMO

13. Circuit Operating Descriptions

13-1 Power

13-1-1 About S.M.P.S (ringing choke converter methol)

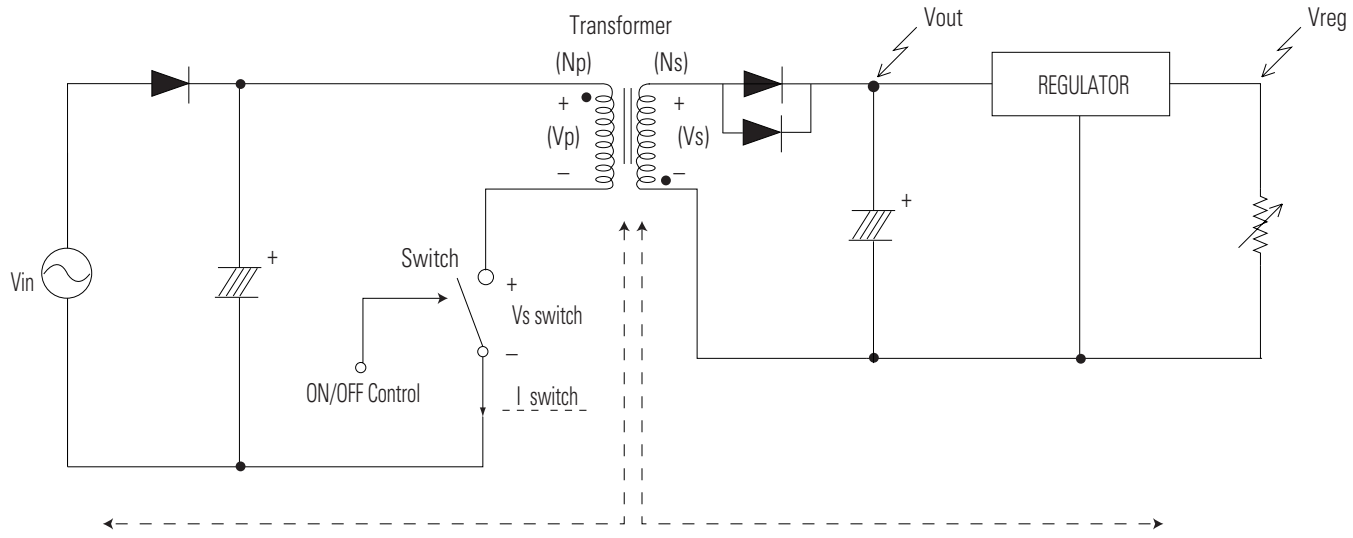


Fig. 13-1

◆Terms

1) 1st : Common power input to 1st winding.
2) 2nd : Circuit followings output winding of transformer.
3) f (Frequency) : Switching frequency (T : Switching cycle)
4) Duty : (Ton/T) x 100

13-1-2 Circuit description [FLY-Back RCC(Ringing Choke Converter)] Control

(a) AC Power Rectification/Smoothing Terminal
1) PADT1 : Convert AC power to DC (Wave rectification).
2) PRCU1 : Smooth the voltage converted to DC.
3) PALT1, PALT2, PACT1, PACT2 : Noise removal at power input/output.
4) PLRU1 : Rush current limit resistance at the momemt of power cord insertion.
· Without PLRU1, the bridge diode might be damaged as the rush current increases.
(b) SNUBBER Circuit : PSRZ1, PSRZ2, PSCX1, PSCZ2, PSDZ1

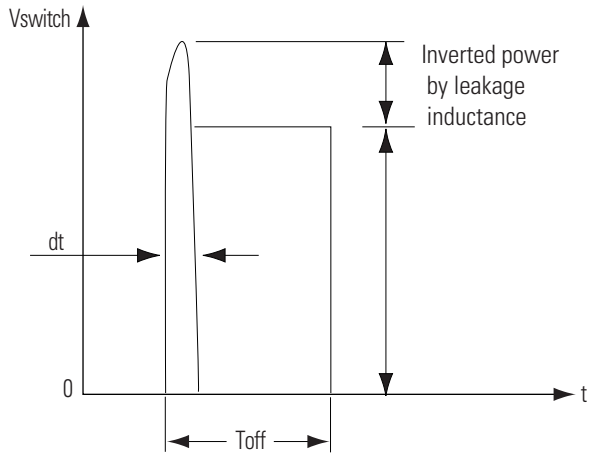


Fig. 13-2

1) Prevent residual high voltage at the terminals of switch during switch off/Suppress noise.
High inverted power occurs at switch off, because of the 1st winding of transformer :
(V=-L1 xdi/dt. L1 : Leakage Induction)
A very high residual voltage exist on both terminals of PQQX1 because dt is a very short.

2) SNUBBER circuit protects PQQX1 from damage through leakage voltage suppression by RC,
(Charges the leakage voltage to PSDZ1 and PSCX1 and discharges to PSRZ1, PSRZ2).
3) PPCF2 : For noise removal

(c) PQIZ1 Vcc circuit

1) PVRL1, PVRL2, PVRL3 : PQIZ1 driving resistance (PQIZ1 works through driving resistance at power cord in)
2) PQIZ1 Vcc : PVRL4, PVDL1, PVCL1
① Use the output of transformer as Vcc,because the current starts to flow into transformer while PQIZ1 is active
② Rectify to PVDL1 and smooth to PVCL1.
③ Use the output of transformer as PQIZ1 Vcc : The loads are different before and after PQIZ1 driving.
(Vcc of PQIZ1 decreases below OFF voltage , using only the resistance dut to lode increase after PQIZ1 driving.)

(d) Feedback Control Circuit

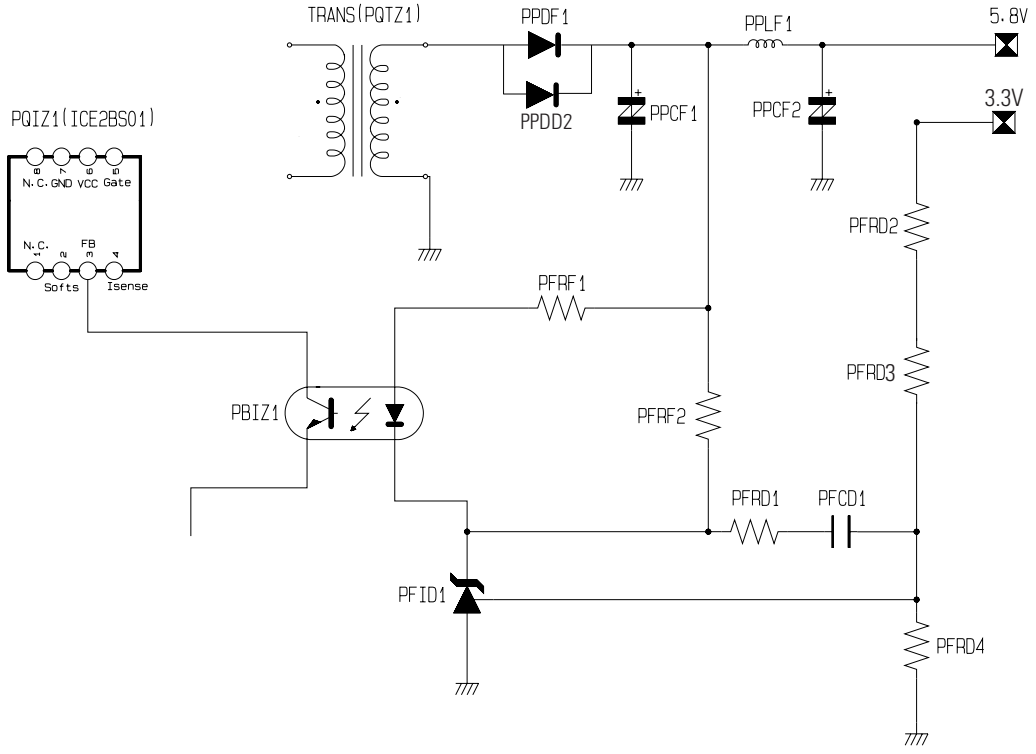


Fig. 13-3

1) F/B terminal of PQIZ1 determines output duty cyle.
2) C-E (Collector-Emitter) of PQIZ1 and F/B potential of PQIZ1 are same.

13-1-3 Internal Block Diagram (Internal Block Diagram of S.M.P.S. Circuit)

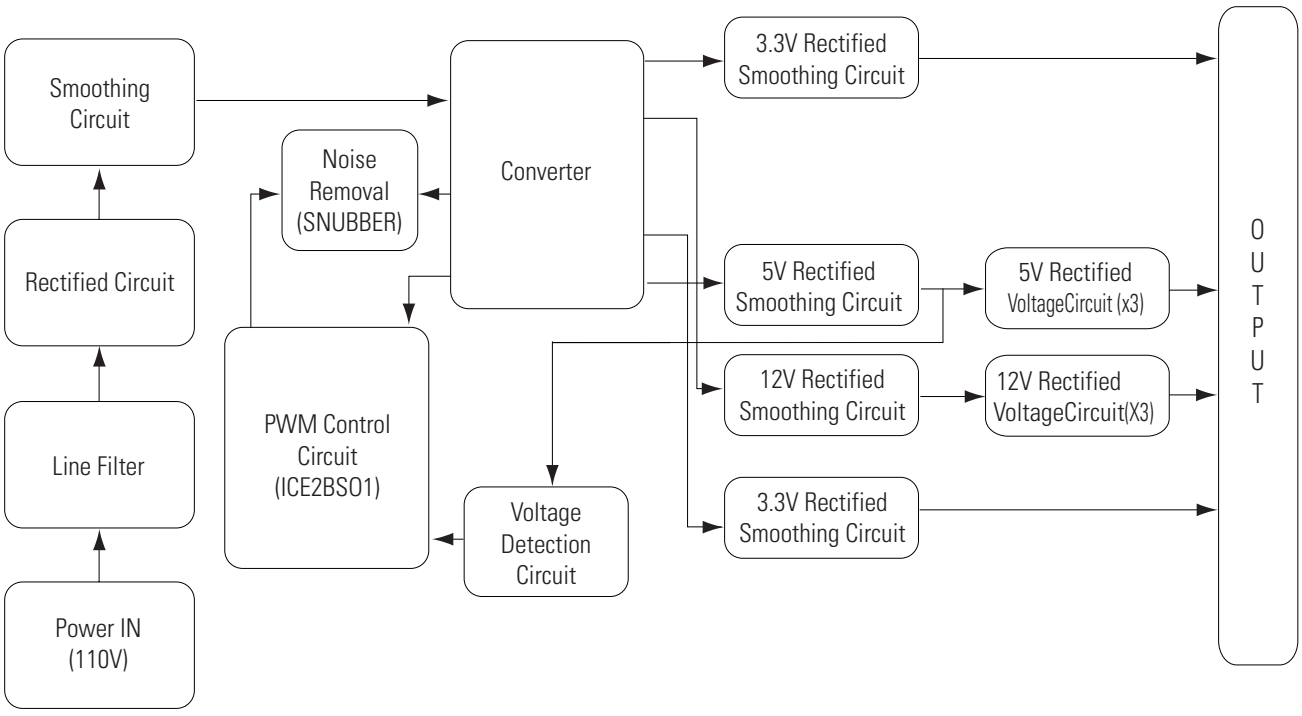


Fig. 13-4

13-2 AV Codec

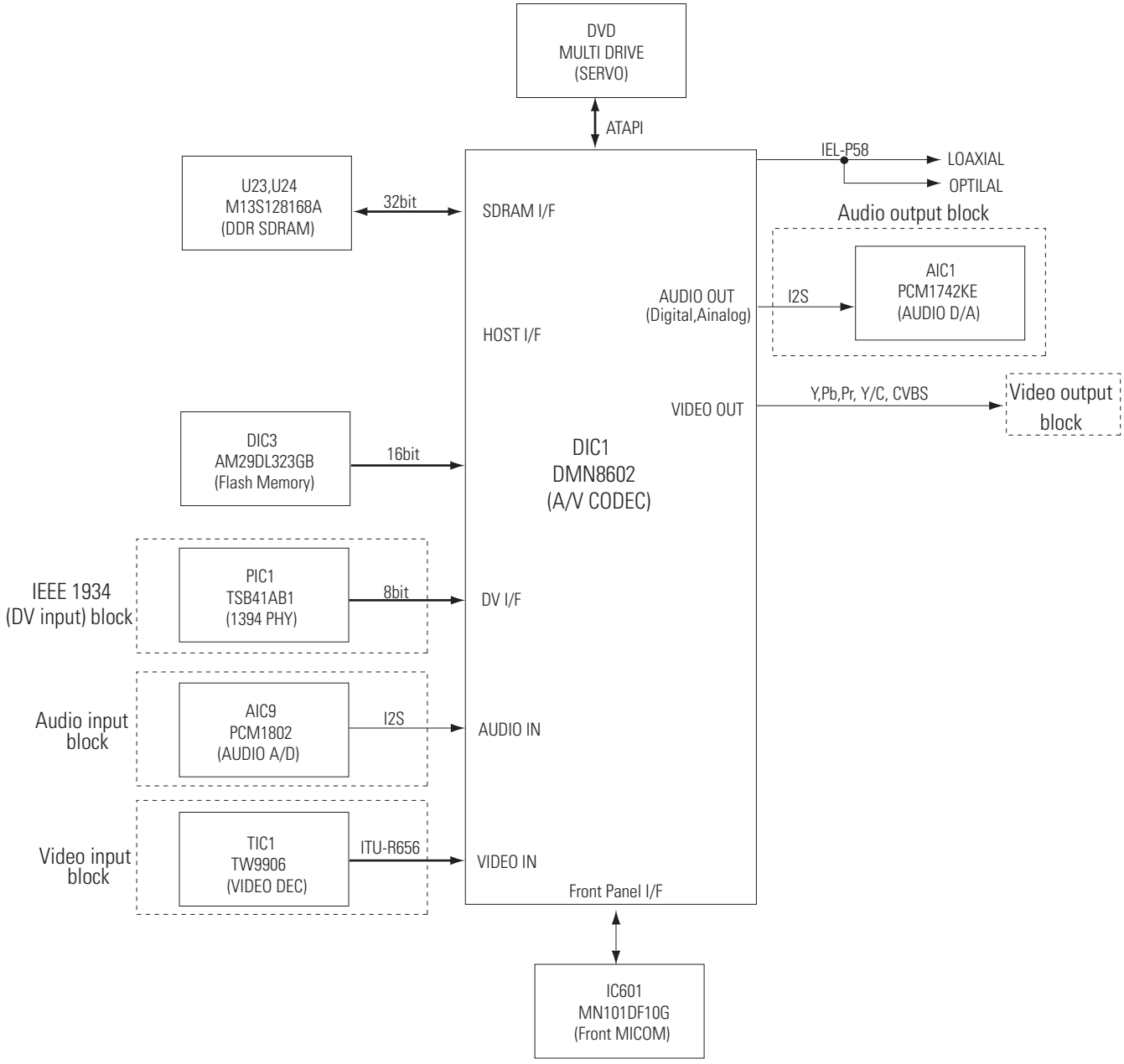


Fig. 13-5

· Main system control
· A/V Encoding/Decoding
· Transcoding/rating
· IEEE 1394 link layer function

· ATAPI interface with DVD-Multi Drive
· Analog Progressive/interlaced video output

13-2-1 DIC1 Processor Internal Architecture Diagram

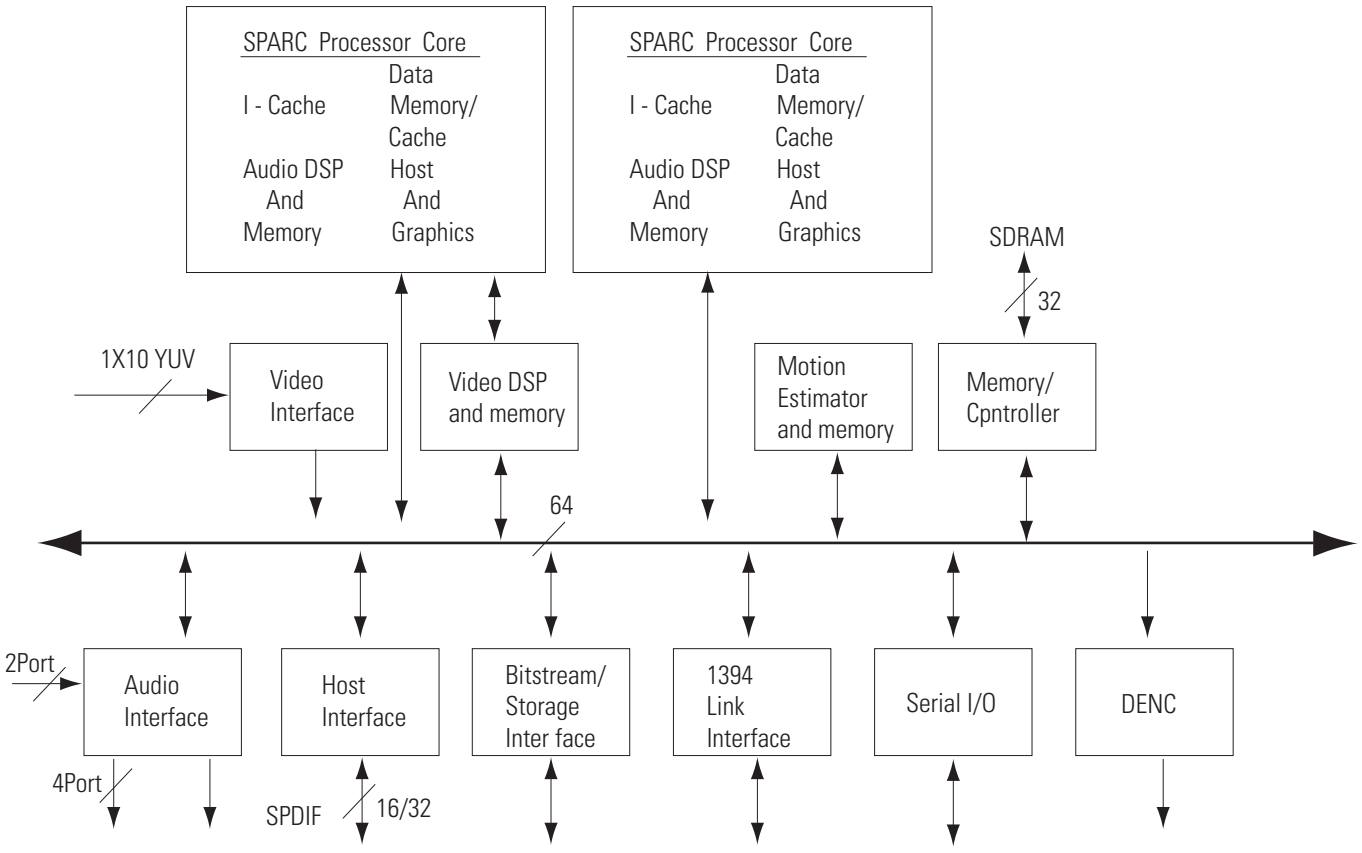


Fig. 13-6

13-2-2 A/V Processor (DIC1) Functional description

1) SPARC Processors
   Two 32-bit SPARC processors, one dedicated to video processing and the other assigned general system tasks and audio processing, perform three classes of functions: system processing, audio processing, and high-level control flow and decision-making tasks for video processing. Optionally, they can also perform 2D graphics and host functions.
   The DMN8602 also support multiple video inputs, windowed video ad graphics with arbitrarily relocatable and resizable windows, letterbox, and side-by-side display of SD sources.
2) Host Interface
   The host communication functions include initializing the DMN-8602 device, downloading software to the local SDRAM, sending commands, monitoring status, and downloading graphics data such as OSD bitmap.

3) Bitstream/Storage interface

◆ ATAPI Controller

ATAPI is an asynchronous, 120ns, 16-bit word interface commonly used to connect devices such as hard disks, CD/DVD ROMs, and DVD RAMs. All operations are initiated by reading/writing a set of ATAPI device registers through programmed input/output(PIO) data transfer. ATAPI has DMA commands for transferring long data. The ATAPI register address is defined by the output pins CS0, CS1, DA[2:0].

◆ The IEEE1394 interface can receive MPEG-2 transport stream or DV stream data contained in isochronous packets (IPs). The DMN-8602 device filters the packets by matching channel IDs. In the case of MPEG-2 transport streams, the DMN-8602 device performs descrambling on the data that is scrambled with 5C encryption. Software is responsible for transport section processing and demultiplexing.

4) Video Interface

◆ Video Input channel

The video input channel captures ITU-R BT.656-compliant 10-bit digital YUV component video stream from Video decoder chip(TIC1)

◆ Video Digital Encoder (DENC)

The NTSC/PAL digital video encoder (DENC) module converts a digital video data stream into NTSC or PAL composite or component video output.

The DMN-8602 DENC output can be in one of the following formats:

- Baseband composite NTSC (M) or PAL (B,D,G,H,I) analog video.
- Separate analog luma(Y) and chroma(C) output to support S-Video.
- Separate analog component video RGB or SMPTE YPbPr output.

5) Audio Interface

The serial audio input port receives uncompressed 16- to 24-bit serial digital audio data from external audio ADC(AIC9). An internally generated clock provides bit serial clocking of the data coming from external ADC

The serial audio output port sends uncompressed 16- to 24-bit serial digital audio data to external audio DAC(AIC1). An internally generated clock provides bit serial clocking of the data coming from external ADC

6) Serial I/O interface

◆ SPI interface

The SPI(Serial Peripheral Interface) port provides a bus for a serial interface with front panel micom(FIC1)

◆ IDC interface

The IDC bus is a simple, two-wire, bidirectional communication bus. The two signals, clock and data, are com mon to every device connected to the bus.

In this system, IDC bus is connected to EEPROM(DIC8) and Video Decoder(TIC1)

13-3 SERVO (DVP Multi Drive)

1) Pick-Up
Data in the disc is processed from the optical pick-up unit (OPU). OPU includes the Elantec chip (EL6912c) which is a highly integrated laser diode driver designed to support multi-standard writable optical drives. This chip also has an IV amplifier with concurrent read and write sampling. The architecture allows reprogramming of the timers to support different media DVD or CD standards, and different speed.

2) A-Chip
A chip is RF processor. This module performs RF signal processing which includes RFIP, RFIN, AGC, RF equal izer. This processor is able to detect tracking error, focus error and various signals such as CE, PE, SBAD, DEFECT, BCA, MIRROR, Wobble, TZC, RC, and RECD.

3) C-Chip
C-Chip is composed of DP1, PRML and WS.
First, the Data processor1 (DP1) performs EFM/EFM+ Demodulation and data is stored in the buffer memory in data processor2 (DP2). DVD data in this buffer is transferred to CSS/ATAPI through error-correction code
(ECC), descramble process and error detection code (EDC).
Second, WS performs the following processes.
① Delay compensation using Shift register
② Sample/Hold pulse generation
③ I/V Gain Control
④ Providing clock for RF chip
⑤ OPC Control signal generation
Lastly, PRML completes the adaptive EQ/VD and Digital PLL.

4) D-Chip
D-Chip consists of Servo DSP, DP2 and 1Mbit memory. Servo DSP is dealing with controlling the servo-mecha nism in DVD recorder. Servo-DSP has the following features.
① Bulit-in 10Bit ADC(8ch), DAC(3ch) and PWM(7ch)
② Step Motor Control Logic: Macro/Micro Step
③ Track Counter: long distance velocity control direct seek
④ Shock/Defect detection
⑤ Header (DVD-RAM)/Land Pre-Pit (DVD-R/RW) Detection
⑥ Several Servo Monitor Signal Detection
⑦ RF IC Interface
⑧ Micom Interface
⑨ Digital Servo Control of focus, tracking, sled and seek
⑩ Disc Auto-Detection
⑪ Automatic Adjustment of the offset, balance and gain of Focus and Tracking Signal
⑫ Direct Seek with Velocity Control
⑬ Step Motor Control: Macro Seek
⑭ De-Track and Lens Shift Detection and Compensation
⑮ Center Error Control
⑯ DVD Layer Jump
⑰ Tilt Detect and Compensation
DP2 performs High Speed ECC and CD DA Decoder.

5) ATAPI Controller

ATAPI (ATA Packet Interface) the standard interface protocol used to connect the CD/DVD Drive to IDE inter face. Data from the front-end is processed to back-end through this ATAPI protocol. Sanyo chip (LC98600CT-XB0) is utilized for ATAPI interface. LC98600CT-XB0 has the following features.

① ECC and EDC correction/addition for CD-ROM data
② Subcode decoding/encoding
③ Spindle servo control
④ CLV/CAV servo control using ATIP data
⑤ ATIP decoding and CRC check functions
⑥ Providing random EFM output for PCA use
⑦ High-accuracy write strategy signal output enabled (CD-R 52x)
⑧ Buffer RAM can be accessed by the microcontroller through the LC98600CT-XB0
⑨ Built-in ATA-PI(IDE) interface (supports Ultra DMA modes 0,1, and 2)
⑩ 52x decoding speed/52x encoding speed supported with 33.8688Mhz
⑪ Maximum transfer speed PIO mode: 16.6 MB/s (with IORDY), Ultra-DMA: 66MB/s (with DMARQ)
⑫ User can freely set the CD main channel, C2 flag, and subcode areas in buffer RAM
⑬ Built-in batch transfer function for transferring (CD main channel, C2 flag, etc., in a single operation)
⑭ Built-in multi-transfer function (allows multiple blocks to be sent to the host automatically in a single operation)

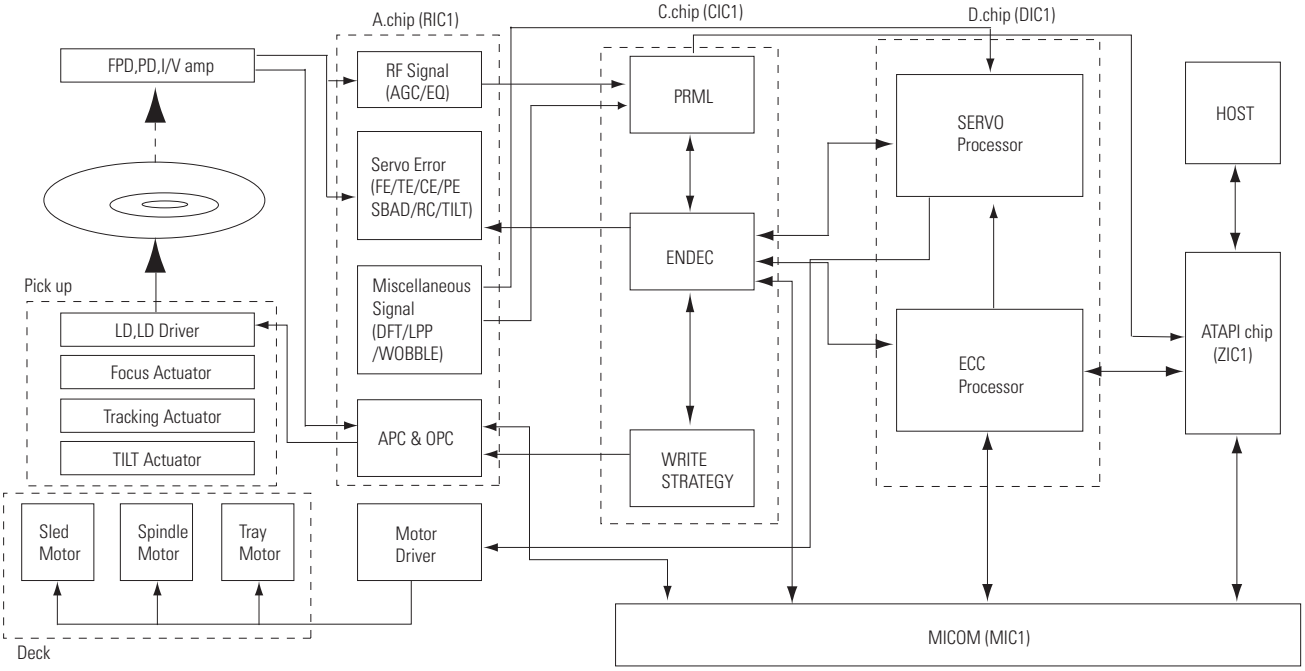


Fig. 13-7

13-4 Video In/out Block

DVD-R130 has the two single CVBS Video input(AV3) and two Scart input from AV1 or AV2.
AV3 Video input is CVBS at the at the Front Panel. AV2 Scart has CVBS & RGB input and CVBS output, AV1 Scart is vice versa at the Rear Panel.
The analog Video signal is selected by the IC201(BU4051 Mux). It is controlled by FIC1 (Front Micom).
TIC1 (Video Decoder) diverges from the 14.318185MHz crystal, then generates ITU-R656 (10bits) and 27MHz clock.
TIC1 (Video Decoder) does closed caption, copy guard detect processing and A/D conversion of analog Video signal converted into 11bit Digital Video signal (ITU-R656 Format) is outputted via DIC1 (MPEG2 Decoder & Encoder with video Encoder) of digital part.

13-4-1 Outline

DIC1 (MPEG2 Decoder & Encoder with video Encoder) diverges from the 13.5MHz crystal, then generates VSYNC and HSYNC.
DIC1 (MPEG2 Decoder & Encoder with video Encoder) does RGB encoding, copy guard processing and D/Aconversion of 10bit Video signal converted into analog signal is outputted via amplifer of analog part.
DIC1 inputted from pin E1 with 13.5MHz generates HSYNC and VSYNC which are based on video signal. DIC1 is synchronous signals with decoded video signal.
The above signals, which are CVBS (Composite Video Burst Synchronized), Y(S_Video), C(S_Video),Y(Component)/G(Green), Cr(component)/R(Red), Cb(component)/B(Blue), are selectively outputted 576i(interlaced Video Output), 576P(progressive Video Output).
DIC1 adopts 10bit D/A converter. DIC1 perform video en-coding as well as copy protection.

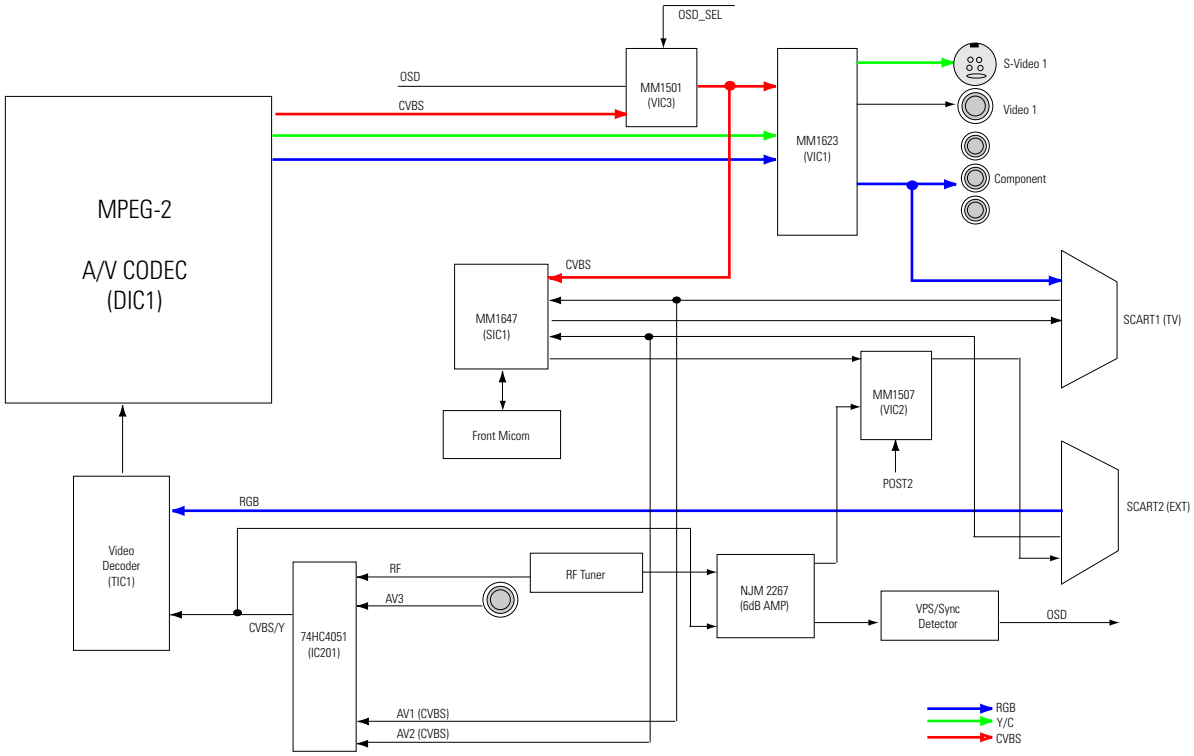


Fig. 13-8

13-4-2 Video Switch (MM1507:VIC2,MM1501:VIC3)

MM1501, 1507 is 2by1 Video switch and VIC2 is switched by Pin15 of SIC1. It selects from RF Video signal via TIC2(NJM2267) for Decoder CH. or normal video output via SIC1.
VIC3 is switched by Pin23 of FIC1. It selects Video Output from DIC1 or OSD SCREEN for Optional setting.

13-4-3 Analog Mux (BU4051, MM1501)

IC201(BU4051) and IC202(MM1501) are Analog Mux.
As input selecttion Pin(9, 10, 11) of the IC201 are controlled by the Front Micom, IC201 select among AV1 CVBS, AV2 CVBS, AV3 CVBS, RF CVBS signal.

13-4-4 MUX IC for 2SCART (MM1647)

SIC1(MM1647) is Audio & Video switcher with I2C bus for Two SCART. I2C bus is connected with FIC1(Front micom) and be control Pin 30 for AV1 CVBS OUTPUT is selected from pin5, pin28.
Pin 29 for AV2 CVBS OUTPUT is selected from pin5, pin3.

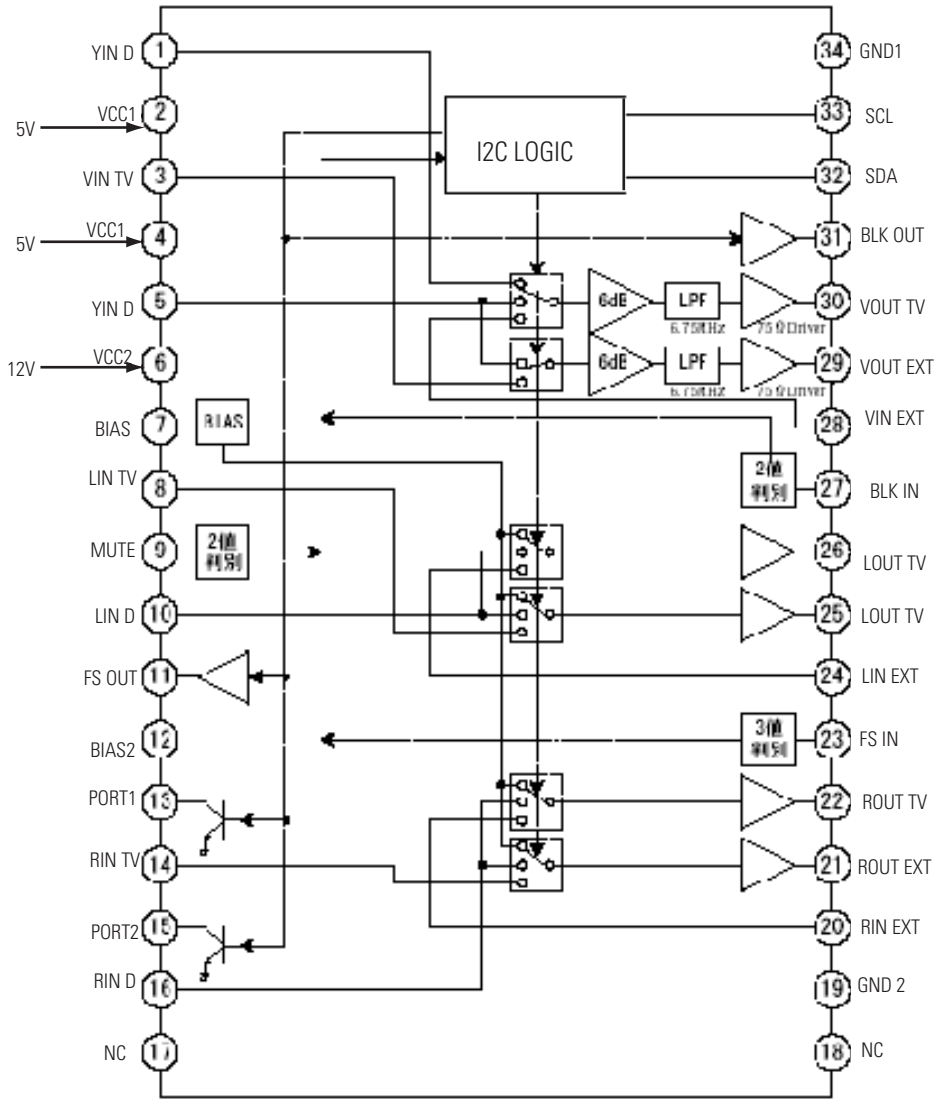


Fig. 13-9

13-4-5 NTSC/PAL Video Decoder (TW9909 : Video Decoder)

The TIC1 (Video Decoder : TW9909) device is a high quality, single-chip digital video decoder that digitizes and decodes all popular baseband analog video formats into digital component video. The TIC1 (Video Decoder :TW9909) supports the analog-to-digital (A/D) conversion of component RGB and YPbPr signals, as well as the A/D conversion and decoding of NTSC, PAL and SECAM composite and S-video into component YCbCr.
This TIC1 (Video Decoder : TW9909) includes four 10-bit 30-MSPS A/D converters. and A/D conversion of 10bit analog Video signal converted into Digital Video signal (ITU-R656 Format) is outputted via DIC1 (MPEG2 Decoder & Encoder with video Encoder) of digital part.
The following output formats supply 10-bit 4:2:2 YCbCr to the DIC1 (MPEG2 Decoder & Encoder with video Encoder) of digital part.
On CVBS and S-video inputs, the user can control video characteristics such as contrast, Brightness, saturation, and hue via an I2C DIC1 port [PIN V17, V18] interface.
The TW9909 decoder includes methods for advanced vertical blanking interval (VBI) data retrieval. The VBI data processor (VDP) slices, parses, and performs error checking on teletext, closed caption (CC), Copy Guard Detect Processing and other VBI data.

13-4-6 Amplifier (MM1623)

VIC1 is 6dB amplifier.
Based on CVBS signal, the final output level must be 2Vpp without 75ohm terminal resistance.
Because the level of video encoder output is only 1Vpp, the level is adjusted with the special amplifier.
When mute of pin 3 is high active, if the pin is floating and connect to power, the output signal is never outputted.
CVBS, Y, C, Y(R), Cb(B), Cr(R) outputted from video encoder are inputted to VIC1 [Pin4, 6, 2, 10, 12, 14] respectively.
The signal to which gain is adjusted by amplifier is outputted from jack via 75ohm Resistance
(VR14, 15, 16, 23, 12, 13).

13-5 Audio

13-5-1 Audio Input Block

DVD-R130 has tree stereo line input terminals and internal TV-audio from RF Tuner Block.
These four analog audio signal source are converted to digital data by Input Block.
Input Block has Multiplexer(AIC51), Input Filter(AIC81, AIC82), and A/D Converter(AIC9).
The switching operation of AIC51 is controlled by FIC1(Front Micom) with I2C interface.

The signal selected by AIC51 are filtered by AIC81,AIC82.
The funtion of these OP-Amp is -6dB level scaling and second order Low Pass Filtering.
AIC9 is syncronized by three Digital clock from DIC1, and output Digital signal to DIC1(Dolby Digital Encoder/Decoder).

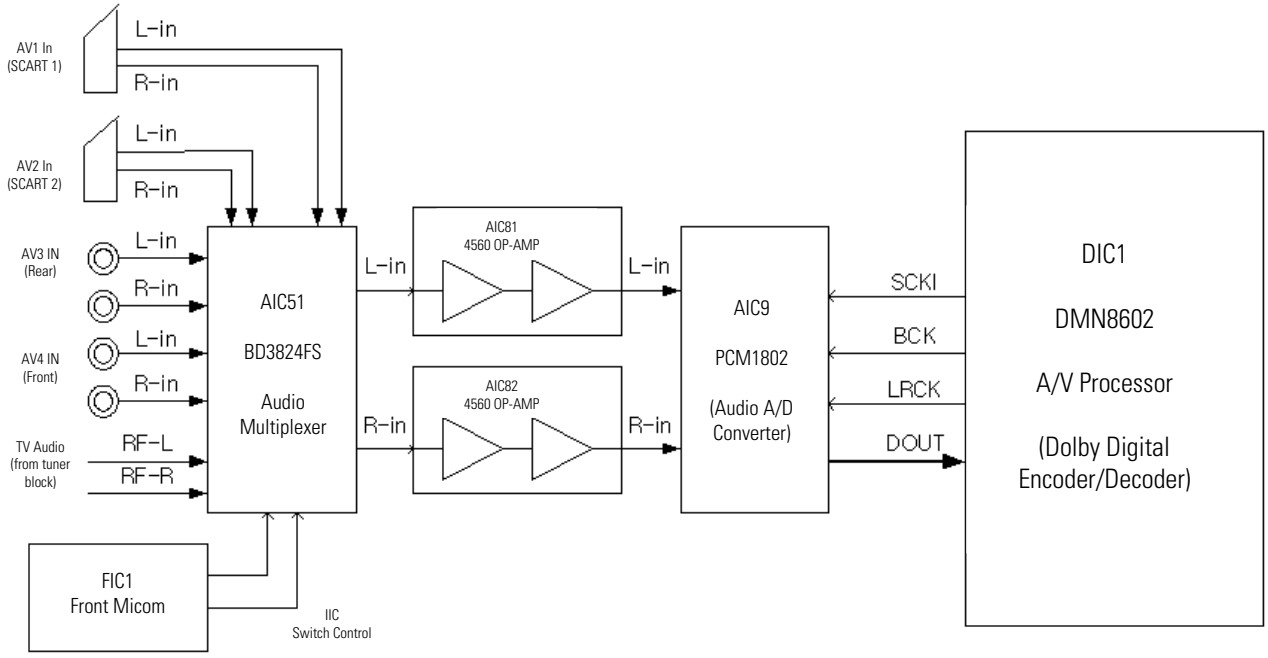


Fig. 13-10

13-5-2 Audio output Block

DVD-R130 has four stereo analog line out terminal, and two digital output terminal.
Decoded signal by DIC1 is inputted to AIC1(D/A converter), then filtered and amplified by AIC4(OP-amp), and finally ouputted via RCA terminal and Scart terminal.
The Signal outputted via AV2 is equal to those of AV1(Scart), and RCA Analog ouput terminal in normal mode.

The Digital audio signal is drived by AIC3 inverter and ouputted via Optical(TOS-link) and Coaxial(S/PDIF) terminal.

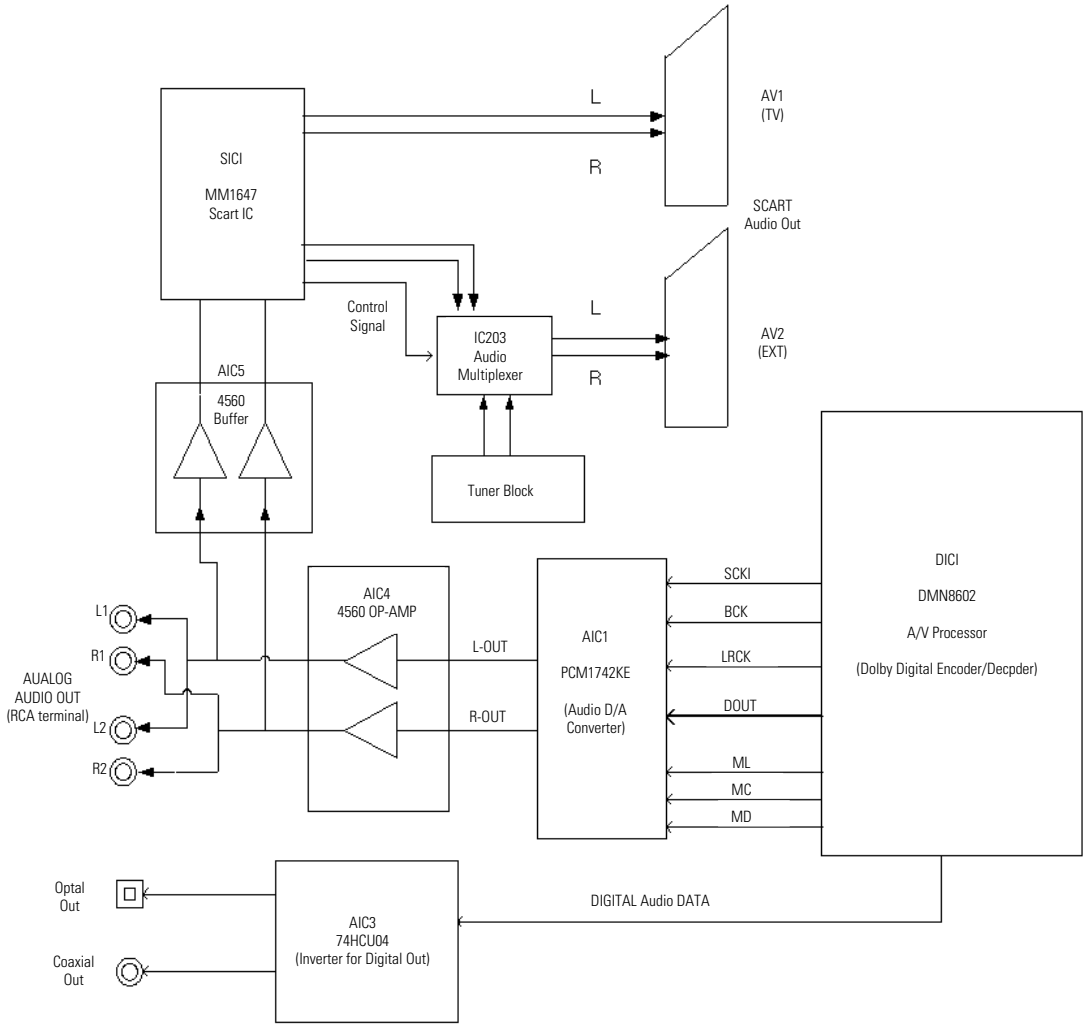


Fig. 13-11

13-6 Tuner

1) Low Pass Filter & High Pass Filter
   This consists of IF trap circuit and UHF & VHF separation circuit. If the input signal is IF (45.75MHz), this filter
   prevents interference.

2) Single tune
   This consists of a filter circuit, RF AMF, impedance conversion circuit, image trap and a single tuning circuit. It prevents noise and other interference signals. It is very important part which improves NF (noise figure) and prevents the various of spurious signals.

3) RF AMF
   RF AMF is made of FET (Field Effects Transistor). It is controlled by AGC coming from IF DEMOD block.

4) Double tune
   It consists of a double tuning circuit to improve characteristic of rejection that results in a better band characteristic.

5) Mixer IC (Mixer, OSC, PLL)
   It consists a VHF and UHF OSC and Mixer circuit. We applied mixer to make better characteristic of rejection, it shows especially various beat characteristic.

6) PLL IC
   The PLL IC plays a role selection of Tuner channel. It was built-in three wire PLL IC, charge pump and band driver.
   The minimum of step frequency is 31.25KH z.

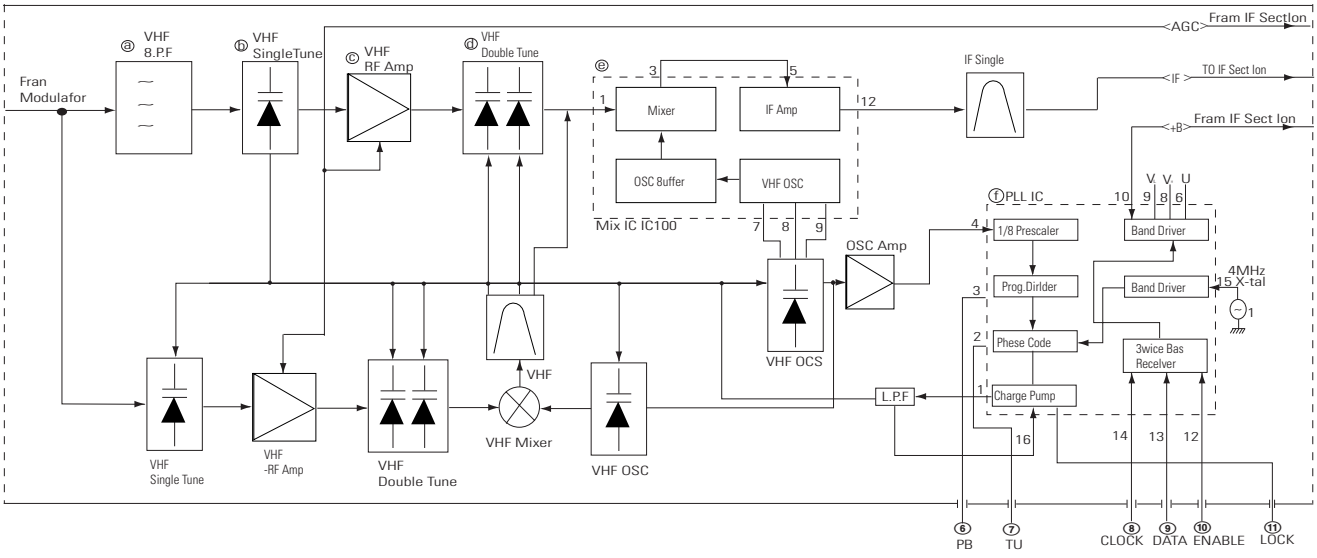


Fig.13-12

13-7 IF

1) SAW FILTER
It passes only needed band of the signal that is converted to IF frequency and decrease the others band to minimize the effect of adjacent channel.

2) RF AGC Control
It used adjusting to determine RF AGC working point in tuner.

3) VCO Tank
When VCO tank detects PLL, it makes the signal which sets a standard.

4) AFT (Auto Frequency Tuning)
AFT automatically controls the oscillator frequency in the tuner, so that it retains a constant level.
It is a quadrature detection type. The carrier, which is detected from video det is directly input to AFT.
The 90 degree delayed phase signal is input at the same time to AFT and, the results come out.

5) IF AMP
IF signal , which is selected in Saw filter, is amplified in IF amp frequency enough to be detected. The IF amp has parallel inputs & outputs structure.

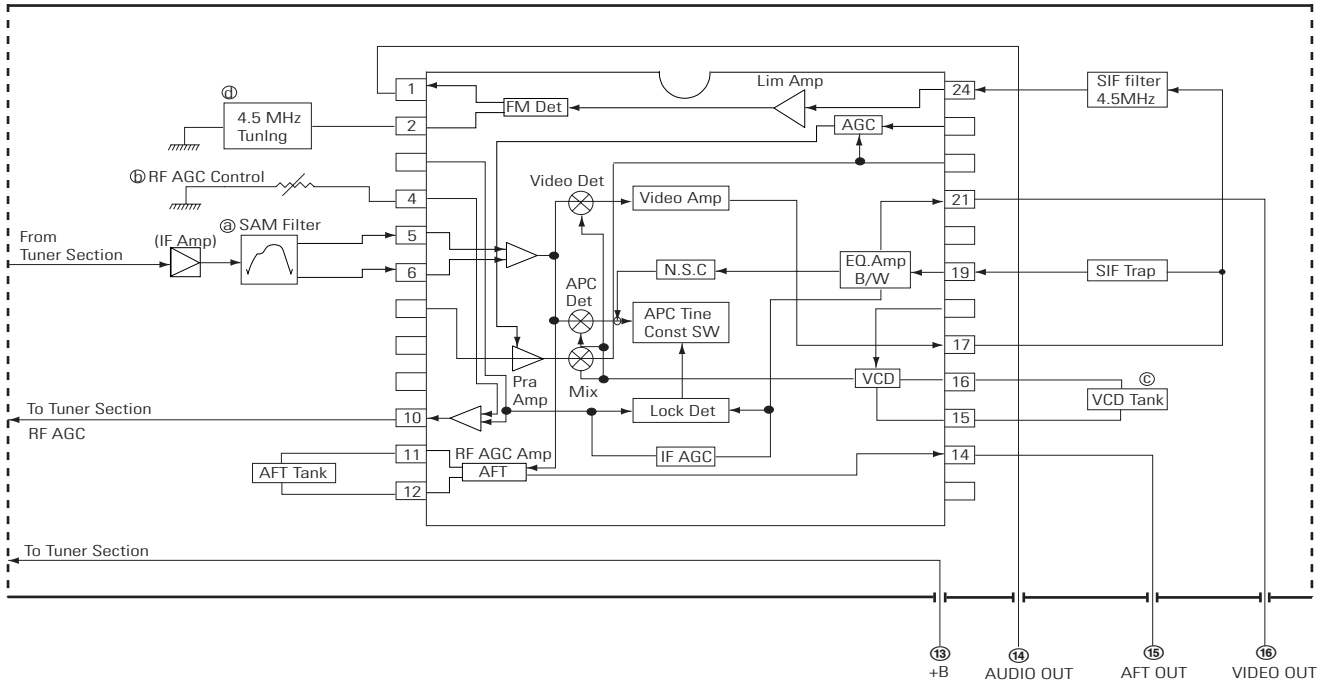


Fig. 13-13

MEMO

14. Reference Information

14-1 Introduction to DVD

14-1-1 The Definition of DVD

DVD is the next generation medium and is the acronym of the Digital Versatile Disc or thr Digital Video Disc, which maximizes the saving density of the disk surface using the MPEG-2 compression technology to enable the storage of 17G bytes of data on the same size CD.

1) 7 times the storage capacity of the conventional CD

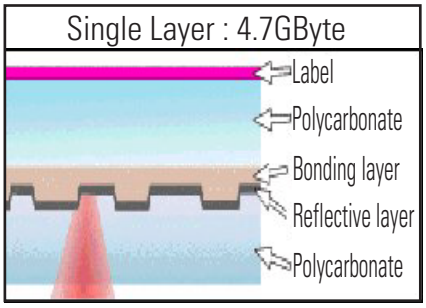
- Minimized the track pitch and pit size to 1/2 of conventional CD.
- Uses red laser with short-wavelenght of 650nm (635nm).

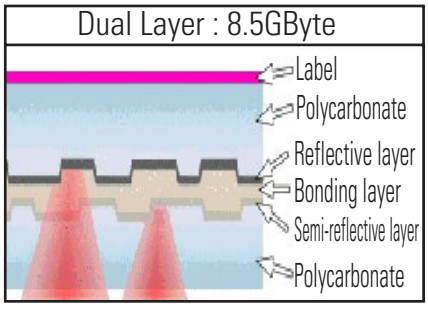
DVD Vs. CD-ROM

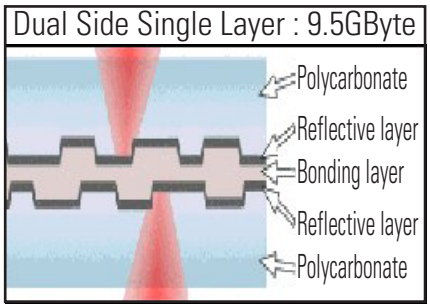
	CD-ROM	CD-R/RW	DVD-ROM	DVD-R/RW	DVD-RAM
Disc Thickness	1.2mm	1.2mm	0.6*2mm	0.6*2mm	0.6*2mm
Lens NA	0.45	0.45(0.5)	0.6	0.6	0.6
Laser wavelenght	780um	780um	650um	650um	650um
Track pitch	1.6pm	1.6pm	0.74pm	0.74pm	0.615pm
Capacity	0.65GB	0.65GB	4.7GB	4.7GB	4.7GB
Track structure	Pit train	Groove	Pit train	Groove	Land/Groove

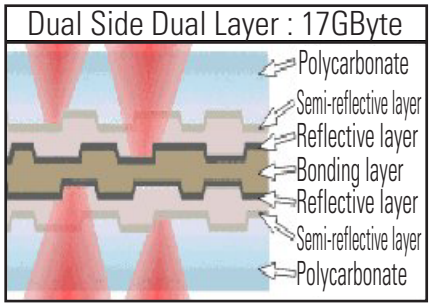
2) Disc Formats

DVD consists of two 0.6mm discs attached together, enabling access to the upper and lower side of the disk, and 4 sides could be used at maximum.









14-1-2 DVD Types

FORMAT	TYPE	APPLICATIONS
DVD-Video	Playback Only	High quality image and sound for movies and other video media.
DVD-ROM	Read Only	Multi-functional, multi-media software that requires large storage capacity.
DVD-Audio	Playback Only	High quality sound that exceeds the CD, multi-channel Audio.
DVD-R	1 Time Recording	As with CD-R, write only once
DVD-RAM	Rewritable (more than 100,000 times)	This can be virtually used as hard-disk, with a random read-write access
DVD-RW	Rewritable (About 1,000 times)	Similar to DVD-RAM except than its technology features a separated read-write access more like phonograph than a hard disk.

14-2 DVD-Video Fromat

14-2-1 Main Features

1) Able to store up to 160 minutes of Movie by utilizing the MPEG-2 compression technology. (Aver. 133min.)

2) Enables more than 500 lines of horizontal resolution. (Class corresponding to the Master Tapes used in broadcasting stations)

3) Provides Dolby Digital 5.1ch Surround 3D sound, which enables theater quality sound (NTSC area).
- For PAL areas, 1 of either MPEG-2 Audio or Dolby Digital must be selected.

4) Multi-Language
- Able to store up to 8 languages of dubbing.
- Able to store up to 32 subtitle languages.

5) Multi-Aspect Ratio
3TV Mode alternatives ; 16:9 Wide Screen (DVD Basic)/4:3 Pan & Scan/Letter Box.

6) Multi-Story
Possible to implement Interactive Viewing which enables the user to select the scenario.

7) Multi-Angle
Able to view the camera angle you selected among the scenes recorded with multiple camera angles.

Note ; The above media features must have the DVD Title that contains the appropriate contents to function properly.

14-2-2 Audio & Video Specifications

<table>
<tr><th colspan="2">Classification</th><th colspan="2">DVD-Video</th><th>Video-CD</th><th>LD</th></tr>
<tr><td rowspan="6">VIDEO</td><td>Compression</td><td colspan="2">MPEG-2</td><td>MPEG-1</td><td rowspan="2">Analog</td></tr>
<tr><td>Pixel</td><td colspan="2">720 x 480</td><td>352 x 240</td></tr>
<tr><td>Horizontal resolution</td><td colspan="2">Max. 500 Lines</td><td>Max. 250 Lines</td><td>Max.420 Lines</td></tr>
<tr><td>Compression rate</td><td colspan="2">1/40</td><td>1/140</td><td rowspan="2">Analog</td></tr>
<tr><td>Transmission speed</td><td colspan="2">Max. 9.8Mbps (variable)</td><td>1.15Mbps (fixed)</td></tr>
<tr><td>TV aspect</td><td colspan="2">16:9 / 4:3</td><td>4:3</td><td>4:3</td></tr>
<tr><td rowspan="5">AUDIO</td><td>Audio</td><td colspan="2">Max. 8 streams</td><td>2CH stereo</td><td rowspan="5">2 Analog CH.
2 Digital CH.
(16Bit/44.1KHz)
or
1 Analog CH.
1 Stream of Dolby Digital
2 Digital CH.
(16Bit/44.1KHz)</td></tr>
<tr><td>Recording type</td><td>Dolby Digital</td><td>Linear PCM</td><td>MPEG-1 Layer 2</td></tr>
<tr><td>Transmission rate</td><td>448Kbps/stream</td><td>6.144Mbps/stream</td><td>224Kbps</td></tr>
<tr><td>Channel</td><td>5.1CH/stream</td><td>8CH/stream</td><td>2CH</td></tr>
<tr><td>Sampling frequency</td><td>48KHz</td><td>16, 20, 24Bit/48, 96KHz</td><td>16Bit/44.1KHz</td></tr>
</table>

14-2-3 Detailed Feature

DVD-Video Feature 1 — **When Developing the DVD Software, various addition and modification is possible.**

As the storage capacity increases, the DVD-Video separates the main data and the additional data such as the Multi-Function into different data areas, enabling the control of time-data ratio to provide the format that enables the flexible Software development

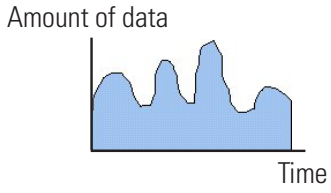
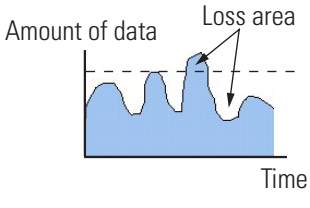
- 1 Movie (3.5Mbps)
  + Subtitle (1 Language)
  + Surround Audio (1 Language)
  = 160min storage (4.673Gbytes)

- 1 Movie (3.5Mbps)
  + Subtitle (4 Language)
  + Surround Audio (4 Language)
  = 160min storage (4.680Gbytes)

- 1 Music Video (4Mbps)
  + 2ch High quality Audio (96kHz/24bit)
  = 72min storage (4.648Gbytes)

DVD-Video Feature 2 — **Application of the MPEG-2 compression technology.**

DVD-Video uses the variable compresion technology, the MPEG-2 to compress the moving image optimally, minimizing the Data loss to Provide a clear, natural screen while increasing the storage time.

DVD-Video	• MPEG-2 (Variable compression : Max. 1/40) - Field unit compression. - Compression rate change according to the amount of Data. - Differentiates the still image and the moving image compression rate, reducing Data loss and enables efficient compression.	
Video-CD	• MPEG-1 (Fixed compression : Max. 1/140) - Frame unit compression. - Compresses all data using the same ratio. - Fast movements are jagged, and unnatural	

DVD-Video Feature 3 | **High quality surround audio.**

DVD-Video can store the audio using the 5.1ch Dolby Digital compression or the advanced Liner PCM method, providing the better-than-CD quality and theater like audio quality.

- DTS (Digital Theater System)
  Home theatre and music playback in the home, DTS provides high quality 5.1-channel surround sound with many extras not offered by other consumer formats. As well as handling DTS-branded releases from a growing number of music labels and consumer software producers, DTS provides enhanced 6.1 matrix and DTS 6.1 discrete decoding that envelopes the listener in sound. DTS technology is featured in a wide cross section of receiver/pre-amplifiers, DVD players and and add-on components from leading consumer audio vendors

- Dolby Digital (AC-3)
  - Unlike the traditional Dolby pro-Logic method, the Dolby Digital method separates all 5 main channels (Front L/R, Center, Surround (Rear) L/R)and the Sub woofer to provide live surround audio.
  - Using the Down Mix method, the conventional Dolby Pro-Logic and Stereo are all compatible.
  - Each separated channels are played back at CD quality sound. (Frequency band: 20Hz ~ 20KHz)

- Linear PCM (Pulse Code Modulation)
  - Provides the high quality Digital sound without the audio data compression.
  - Various Digital Recordings are possible as shown in the table to the right.

Sampling Frequency	Bit Rate
48KHz	16bit
	20bit
	24bit
96KHz	16bit
	20bit
	24bit

- Dolby Digital compatible Audio Mode

Audio Coding Mode	Channel Format					Remark
		Front		Surround (Rear)		
	L	C	R	L	R	
1/0		0				Mono
2/0	0		0			Stereo
3/0	0	0	0			Surround
2/1	0		0	Mono		
3/1	0	0	0	Mono		
2/2	0		0	0	0	
3/2	0	0	0	0	0	

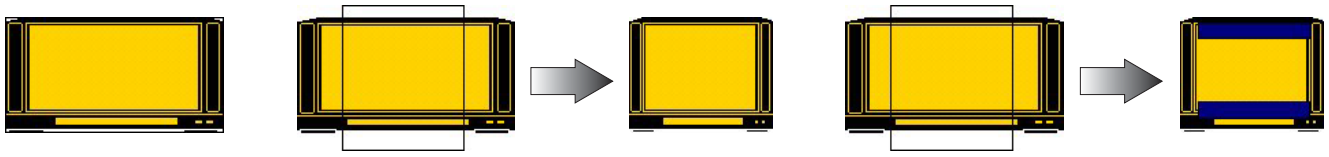
DVD-Video Feature 4 — Multi-Language

- Audio Dubbing - Max. 8 Languages
- Subtitle - Max. 32 Languages. Capable of storing, and selectiong.
- Linear PCM (Pulse Code Modulation)

DVD-Video Feature 5 — Multi-Aspect

- Unlike the conventional VCD or LD, DVD-Video has the default of 16:9 Wide, and can be viewed using the conventional 4:3 TV, enabling the expansion of viewer selection capabilities.

  - 16 : 9 TV : Wide Mode (16:9 Wide Full Screen)
  - 4 : 3 TV : Letter Box Mode, Pan & Scan Mode

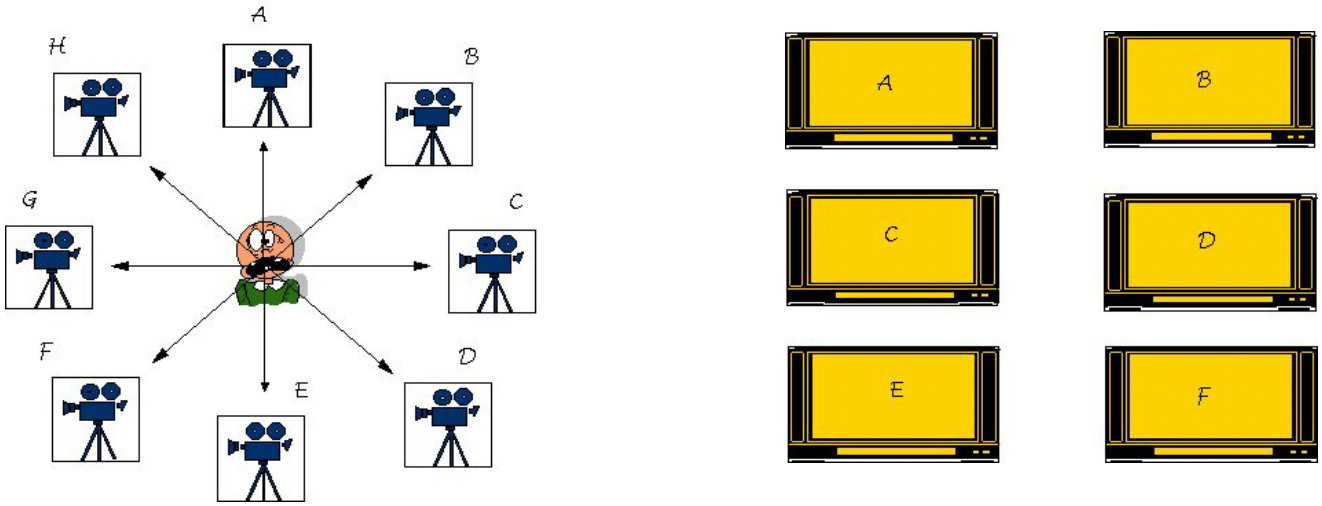


16:9 Wide | 4:3 Pan & Scan | 4:3 Letter Box

Note ; This function is disc-dependent, may not work on all DVDs.

DVD-Video Feature 6 — Multi-Angle

- Up to 9 angles of view may be stored, enabling the viewer to select a specific viewpoint at a given time.
  --> Especially, for the Music Video and Sports Title, this provides a more lively image of the scene.



Note ; This function is disc-dependent, may not work on all DVDs.

DVD-Video Feature 7 — **Multi-Story**

- DVD-Video provides the enviroment suitable for the bi-directional Software develoment, providing multiple scenarios. This feature enables the Multi-Story function.

OPTION — **Parental Lock**

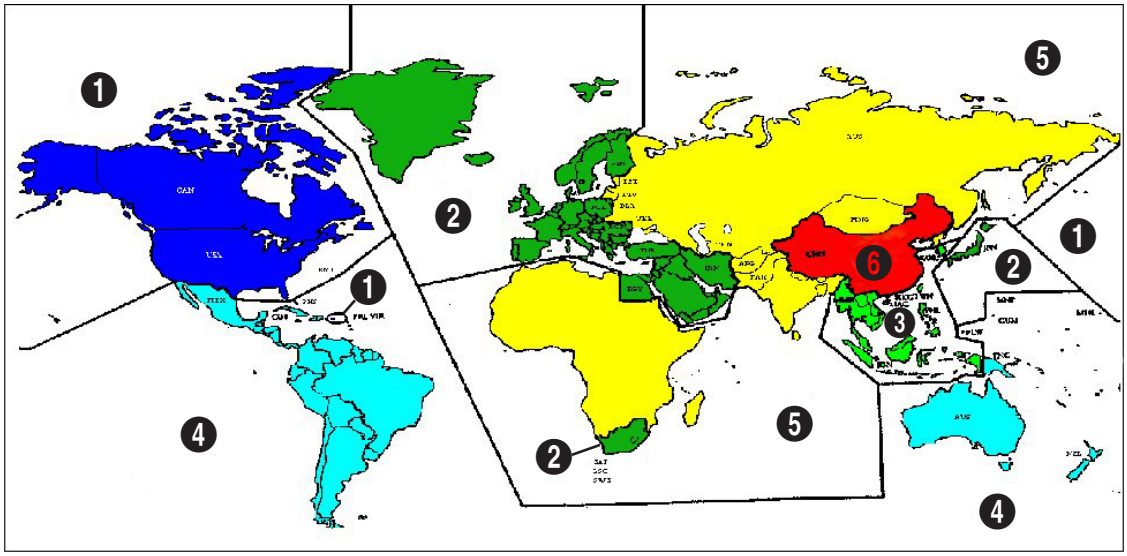
- For the titles that are not suitable for children viewing, Parental Locks are set, requesting user defined passwords for viewing
- Parential Locks may be set on specific frames of the Title, enabling the player to skip those frames during playback.

COPYRIGHT — **Regional Code & Macrovision**

- Classify the world into 6 regions, and if the DVD Title and the Player's "Reginal Code" do not agree, playback is prohibited.

- **Regionnal Coding is optional for the Soft developers (Region 0 All Code), but the Hardware developers must adopt the appropriate regionnal code for sale.**

  - Region 1 : The United States and its territories, Canada.
  - Region 2 : Europe, Japan, Greenland, Egypt, South Africa, the Middle East.
  - Region 3 : Taiwan, Hongkong, Korea, South East Asia.
  - Region 4 : Mexico, South America, Australia, New Zealand.
  - Region 5 : Russia, Eastern Europe, India, Africa.
  - Region 6 : China.
  - Region 0 : Worldwide (All Code)



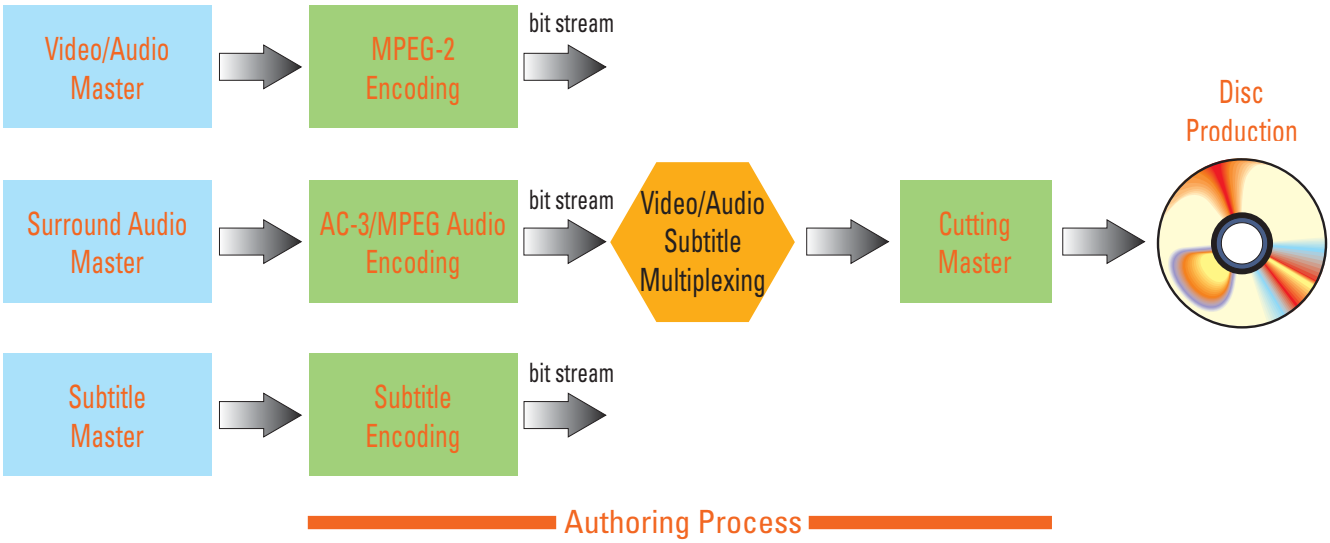
- Adoptation of the Macrovision System disables the copying on to other media.

Remark | **DVD-Video Authoring Process**

- The image quality of the DVD-Video may vary accoring to the quality of the Master and the Authoring Process

  - The image quality of the DVD-Video varies according to the Digital Mastering Source such as the conventional LD, VCD, or Original Film.
  - Different Authoring Process are used accoring to the Software developers, and this may affect the DVD image quality.

- **Authoring Process**



14-3 About IEEE1394

14-3-1 Comparison between IEEE-1394 and other digital interfaces

Since there are many different interfaces available, for example, RS422, RS644, and USB, vision system integ rators are very likely to be confused when choos ing the right interface for their application. For the ideal design of a vision syste m, it is vital to have the righ t bus/inte rface. To make things even more complex, ther e is no easy answer such as IEEE-1394 is the best choice.
Furthermore, the new CameraLink standard, promoted by compan ies such as Puln ix, Basler AG, and many frame grabb er companies, seems to be the stat e of the art interface. So why should IEEE-1394 be an alternative?

These questions are as complex as mostvision applicatio ns and there is no simple guideline .
Each of these interfaces offers many benefits and each of them has its individual drawbacks and restric tions. In the table below, we try to give a brief comparison of the most popular interface systems.

	RS 644 [1]	CameraLink	IEEE-1394	USB 2
Topology	Link	Link	Bus	Bus
Windows Driver	Proprietary	Proprietary	Native (Win 200, Win 98)	Native (Win 200, Win 98)
"Guaranteed" Bandwidth	~20 to 40 MByte/s	~255 MBytes/s	~32 MBytes/s[2]	~38 MBytes/s[2]
Cable Length	~10 m @ 40MHz ~20 m @ 200MHz	~10 meters	4.5 meters	5 meters
Wires Needed for 8 Data Bits	22[3]	10	4	2
Parameter Port	No	≥ 1 KByte/s	~8 MBytes/s [2]	~9 MBytes/s [2]

[1] These specs are for a typical 8-bit camera application operating at 20 MHz or at 40 MHz.
[2] 80% of the bus bandwidth is used for image data and 20% is used for parameter data.
[3] 16 wires are used for data bit transfer and two wires each are used for the separate Line Valid, Frame Valid, and Pixel Clock signals required with RS-644 transmission.

A careful comparison of the specifications shown in the table should be your first sele ction guide for the interface. For example, for an integ rator who needs very high speed, USB 2 and IEEE-1394 are not the first choice. On the other hand, these buses are the ones to select in cases
where multiple cameras are needed or cost is a critical issue. Also, the user needs to be aware
that the D-Cam specification curre ntly does not specifically support Line Scan cameras.
However, the specification is open and line scan suppor t could be achieved via Format 7. As
for USB 2, it is still in its infancy in machine vision and we are not aware of any kind of machine vision support.

14-3-2 Fiexibility and Cost Reduction

Many image processing application engineers face a familiar group of problems when designing and building a system. The end user requires system flexib ility, simple adaptation, fast delivery times, and most importantly a reasonable price. With conve ntional systems, whether analogor digital, engine ers must confine them selves to certain combina tions of the existing cameras, frame grabbers, and software. The product choice for this system config uration is limited. Unless the decision is made to use a high cost frame grabber that supports multiple cameras, sometimes known as multi-norm , it is usually not possible to operate camera s with different resolutions from the same frame grabber.

For many applications, the introductio n of digital cameras is hindered by the cost specified by the end custom er, however technically effective digital cameras may be. With the increa sed use of IEEE-1394 in the industrial image processing business, many of these problems are solvable in a sure , safe , and cost effec tive way.

1) Hardware Cost Example

This example compares two simi lar vision systems. Each system uses four Megapixel
resolution digital cameras . The traditio nal solu tion consists of one frame grabber per camera, one parallel digital data cable per camera, and one power supply per camera.
The 1394 solution requi res one hub and one interface card to connect the four cameras , along
with five ine xpensive 1394 cables. The 1394 cables carry power to the cameras directly from the computers internal power supply. (Note tha t not all compute rs are capab le of supplyi ng enough power for the cameras. In some cases a separate power supply may be required.)

Traditional Solution with multiple frame grabbers	Price	1394 Solution	Price
Four Cameras	18,000	Four 1394 Cameras	18,000
Four Frame Grabbers	4,400	One 1394 Interface Card	100
Four Cable	400	One 1394 Hub	120
Four power Supplies	320	Five Cables	150
Total	$23,120	Total	$18,370

14-3-3 Application Examples

Today, there are already applications realizing the benefits of IEEE-1394 technology. For example, at one of our customer sites, Basler was faced with a vision system which has the following specificatio ns:
The machine is a hig h-speed assembly system . Two indepe ndent robots take different par ts (different in size, shape, and reflection) from a support unit and mount these parts on a mounting plate. Timing is crucial, and in the worst case, a part must be taken from the tray every 100 ms. Accuracy of parts mounting is also critical (0.5 mm) . To have a vision system inspecting these operations , 4 cameras (2 on each of the rob ots) are needed:
- 2 low resolution Basler A302f camera s (640 x 480) for checking if the mounting plate is in place
- 2 high-resolution Basler A101f cameras (13 00 x 1030) for checking the components to be mounted.

Since most of the parts are differen t, the two A101f cameras must be reconfigured before almost every image acquisit ion. In the worst case, the AOI, shutter, and som etim es gain need to be adjusted.

1) Solution used before Basler s Intervention

The customer used analog camera s with CCIR resolution (768 x 582) only. This drast ically restricted the number of parts which could be mounted using the robots. Sin ce thes e camera s had no communication por t for configuration, adjusting the AOI was not possible and differ ences in reflection of the parts needed to be adjusted for by driving a flash circuit. All cameras were interfaced into one frame grabber (one PC).

2) Possible solution wih digial cameas using RS 644 OR Camera Link

Using RS 644 or CameraLink based camera s, the customer would need one frame grabber for each camera. It is very likely that the user would need two PCs (one for each robot). Changing the camera-configuration on the fly would require adv ance d grab ber cards since simple grabbers are not capable of easily changing their registers for different AOIs.

3) IEEE-1394 solution

All cameras are attached to a sing le interface card in the PC. The Basler A302f is only used when a new mounting plate is pos itione d by the handler. In norm al operation , only the two Basler A101f cameras will be sending data at the same time and they will be operating at about 10 FPS. This results in a data rate of about 27 MBytes/s, which is well within the specification for IEEE-1394.

Since IEEE-1394 supports bi-directional communication between the camera and the PC, before each frame capture , the PC can easily change resolution, gain , offset, shutter speed, or whatev er is required.

The IEEE-13 94 solution results in the se clea r advanta ges for the custom er:

- Onlyone PC,

- Only one inter face card (very inexpensive compare d with frame grabber cards),

- Easy and inexpens ive cabl ing ,

- The system meet s the expect ations for spee d and accuracy,

- The range of inspect able parts is much bigger than with the old syste m.

MEMO